U.S. Environmental Protection Agency
Office of Waste Programs Enforcement
Contract No. 68-W9-0006

PRELIMINARY ASSESSMENT/
VISUAL SITE INSPECTION

GEORGIA-PACIFIC CORPORATION
KALAMAZOO, MI 49001
MID 042 441 022

FINAL REPORT

TES 9

Technical Enforcement Support at Hazardous Waste Sites Zone III Regions 5,6, and 7

PRC Environmental Management, Inc.

PRC Environmental Management, Inc.
233 North Michigan Avenue
Suite 1621
Chicago, IL 60601
312-856-8700
Fax 312-938-0118

PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

GEORGIA-PACIFIC CORPORATION
KALAMAZOO, MI 49001
MID 042 441 022

FINAL REPORT

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460

Work Assignment No.	:	C05087
EPA Region	:	5
Site No.	:	MID 042 441 022
Date Prepared	:	March 18, 1992
Contract No.	:	68-W9-0006
PRC No.	:	009-C05087-MI2N
Contractor Project Manager	:	Shin Ahn
Telephone No.	:	(312) 856-8700
Prepared By	:	Dynamac Corporation
	:	(Russ Crittenden)
Telephone No.	:	(312) 466-0222
EPA Work Assignment Manager	:	Kevin Pierard
Telephone No.	:	(312) 886-4448

TABLE OF CONTENTS

ATTACHMENTS

TABLE OF CONTENTS (continued)

LIST OF TABLES

LIST OF FIGURES

RELEA...
DATE 2/4/99
RIN # 866-99
INITIALS MJ

ENFORCEMENT CONFIDENTIAL

EXECUTIVE SUMMARY

Dynamac Corporation (Dynamac) performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the Georgia-Pacific Corporation (GPC) facility, located in Kalamazoo, Michigan. This report summarizes the results of the PA/VSI and evaluates the potential for releases of hazardous wastes or hazardous constituents from SWMUs and AOCs identified. In addition, a completed U.S. Environmental Protection Agency (EPA) Preliminary Assessment Form (EPA Form 2070-12) is included in Attachment A to assist in prioritization of RCRA facilities for corrective action.

GPC is a paper manufacturing facility located in an industrial area on the Kalamazoo River in the City of Kalamazoo and Kalamazoo Township, Michigan. The GPC facility occupies approximately 100 acres, consisting of the Mill Property, King Highway Landfill, Willow Boulevard Landfill, and 'A' Landfill areas. The facility produces paper from purchased virgin and recycled pulp. GPC does not have a pulping operation. Under a series of owners, the facility has been in operation at this location since 1892.

The facility normally generates three hazardous waste streams and eight nonhazardous waste streams. Hazardous wastes generated at the facility include paint waste (D001), paint thinner waste containing ethyl ether and methanol (D001, F003, F005), and waste petroleum naphtha (D001). Nonhazardous wastes generated at the facility include process wastewater, solid rejects, scrap metal, residuals, empty drums, waste oil, coal ash, and municipal wastes. In addition, the facility occasionally disposes of a variety of unused process and laboratory chemicals which may be hazardous or nonhazardous, and polychlorinated biphenyl (PCB)-containing special waste from retrofilling of PCB transformers.

The facility submitted a RCRA Part A Permit Application for container storage of hazardous waste, and maintained an Interim Status hazardous waste storage unit from 1983 until 1985. GPC has operated as a generator since undergoing Michigan Department of Natural Resources (MDNR)-approved RCRA closure in 1985.

The PA/VSI identified the following 13 SWMUs and 3 AOCs at the GPC facility:

Solid Waste Management Units

1 Hazardous Waste Drum Storage Area
2 Nonhazardous Waste Drum Storage Area
3 Paint Thinner Waste Satellite Accumulation Drum
4 Wastewater Treatment Plant and Dewatering Presses
5 King Highway Landfill
6 Willow Boulevard Landfill
7 'A' Landfill

Solid Waste Management Units (continued)

8 Rejected Material Collection System
9 Scrap Metal Collection System
10 Portable Waste Oil Tanks
11 1,000-Gallon Waste Oil Aboveground Storage Tank
12 Empty Drum Crushing and Disposal Area
13 Coal Ash Baghouses and Storage Silo

Areas of Concern

1 Fuel Oil and No. 6 Residual Fuel Oil Underground Storage Tank Area
2 Gasoline Underground Storage Tank Area
3 Ammonium Hydroxide Underground Storage Tank Area

There have been several types of historical releases from the facility, including releases from landfills, releases from underground storage tanks (USTs), process water releases, and chemical spills. These releases affected soils, groundwater and/or surface water. There have been no documented releases to the air from the facility.

The three landfills (King Highway, Willow Boulevard, and 'A' Landfills) (SWMU Nos. 5, 6, and 7, respectively) at the facility are located adjacent to the Kalamazoo River and have released PCBs to soils, groundwater, and surface water. During the 1950s and 1960s, the facility accepted waste carbonless copy paper for recycling. This paper contained PCBs, and in the process of de-inking, pulping and making paper, the facility produced PCB-containing effluent from its wastewater treatment plant. Solids contained in this effluent were dewatered in residual lagoons which are now the King Highway Landfill (SWMU No. 5). Lagoons formerly owned by Allied Paper Company and later acquired by GPC and operated by GPC as the 'A' Landfill (SWMU No. 7) also accepted PCB-contaminated residuals during this period. The former lagoons which are now landfills were not lined and PCBs have been released to soils and groundwater. GPC also excavated dewatered residuals from King Highway lagoons and disposed of them at the unlined Willow Boulevard (SWMU No. 6) and 'A' Landfills (SWMU No. 7). This segment of the Kalamazoo River is a part of the National Priorities List Portage Creek/Kalamazoo River (PC/KR) Superfund site and GPC is one of three potentially responsible parties (PRP) associated with the Site. GPC is currently participating in the development of a Remedial Investigation Workplan for this Site pursuant to an Administrative Order on Consent GPC signed with MDNR in December 1990.

The USTs removed from the AOCs at the facility leaked petroleum products and ammonium hydroxide to surrounding soils and groundwater. GPC excavated some contaminated soils during the UST removals, but contaminated soils still remain. GPC installed monitoring wells near the Fuel Oil and No. 6 Residual Fuel Oil Underground Storage Tank and Gasoline Underground Storage Tank Areas (AOC Nos. 1 and 2), but has

observed no groundwater contamination in samples collected from the wells. No groundwater monitoring has been conducted at the Ammonium Hydroxide Underground Storage Tank Area (AOC No. 3).

The facility has a National Pollutant Discharge Elimination System Permit for discharge of noncontact cooling water to the Kalamazoo River. Process wastewater is treated at the facility wastewater treatment plant (WWTP) to remove paper residuals. The WWTP and associated sludge dewatering presses are designated SWMU No. 4. GPC discharges the treated wastewater to the Kalamazoo Water Reclamation Plant. Excess water is removed from the residuals in the dewatering presses, and is hauled to GPC's King Highway Landfill. There were occasional releases of untreated process wastewater from the paper machines to the river in the 1980s, but the outfalls were altered in 1988 to prevent future occurrences.

There have also been two documented releases of process chemicals from the facility due to spills in the receiving area. One of these spills, consisting of 30 gallons of sodium bisulfite, entered the Kalamazoo River. There was also a release of approximately five pounds of nonhazardous dewatered residuals from a truck to the river. Dynamac observed releases of nonhazardous oil to the cracked concrete pad around the 1,000-Gallon Waste Oil Aboveground Storage Tank (AST) (SWMU No. 11), and a release of nonhazardous dewatered residuals to soils around the facility WWTP (SWMU No. 4).

The potential for releases of wastes to soil is high from SWMU No. 11 because there is an extensive area of spillage on the cracked concrete pad around the 1,000-Gallon Waste Oil AST. The potential for releases to soil is moderate from SWMU No. 14 due to the possibility that paper and other materials could be blown by the wind. There are documented releases to soils from SWMU Nos. 4, 5, 6, and 7, and also from all three AOCs. The potential for release to soils from the other SWMUs is low.

The potential for releases to groundwater is high from SWMU Nos. 5 and 11. PCB-contaminated soils are present in King Highway Landfill, and oil spilled from the 1,000-Gallon Waste Oil AST may penetrate the cracked concrete pad and percolate through the soil to groundwater. The potential for releases to groundwater is high from AOC Nos. 1, 2, and 3 because contaminated soils are present in these areas and the water table is close to the ground surface. Releases to groundwater have been documented from SWMU Nos. 6 and 7. The potential for release to groundwater from all other SWMUs is low.

The potential for a release to surface water is high from SWMU No. 7 because the landfill contains unvegetated patches that may erode into the adjacent Kalamazoo River. There are documented releases of PCBs to surface water from SWMU Nos. 5 and 6. The potential for releases to surface water from SWMU No. 14 is moderate due to the possibility that paper and other materials could be blown by the wind. The potential for releases to surface water from the other SWMUs and AOCs is low.

The potential for release to air from SWMU No. 11 is high because the spilled oil near the 1,000-Gallon Waste Oil AST may contain volatile constituents. The potential for release to air from the other SWMUs and AOCs is low.

The area surrounding GPC is mixed industrial and residential. The facility is divided into two parts by the Kalamazoo River, with the Mill Property lying north of the river and the three landfills lying south of the river. Residences are located immediately south of the landfills. Area residents are supplied with municipal water from groundwater wells. The nearest municipal well is located approximately one-eighth of a mile northwest and upgradient of the facility, and draws from the lower of two glacial aquifers. Groundwater flow at the facility is generally towards the Kalamazoo River; however, the municipal well's cone of depression may influence groundwater flow at the facility. There are no known wells downgradient from the facility.

The Kalamazoo River flows along the north boundary of the facility landfills and is used for recreational boating, fishing and swimming. The nearest sensitive environment is a wetland located one-quarter of a mile north of the GPC facility. Access to the landfill portions of the facility is restricted by fencing and locked gates except on the river frontage where access could be gained by boaters. Access to the Mill Property is controlled on all sides by fencing, locked gates, and 24-hour manned security.

Dynamac recommends several courses of action at some of the GPC SWMUs and AOCs. Dynamac recommends containment of spills at the facility WWTP (SWMU No. 4) and cleanup of oil spilled near the 1,000-Gallon Waste Oil Above Ground Storage Tank (SWMU No. 11). Dynamac recommends that GPC continue to monitor groundwater for PCBs at each landfill (SWMU Nos. 5, 6, and 7), and continue to monitor groundwater for petroleum hydrocarbons and aromatic compounds at the UST areas (AOC Nos. 1 and 2). Dynamac further recommends that GPC continue to pursue formal closure at the Willow Boulevard Landfill (SWMU No. 6), attempt to vegetate the bare areas on the 'A' Landfill (SWMU No. 7), and develop remediation plans for the remaining PCB-contaminated soils in SWMU Nos. 5 and 7. Finally, Dynamac recommends that GPC investigate possible groundwater contamination from leaking product at the Ammonium Hydroxide Underground Storage Tank Area (AOC No. 3).

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC), received Work Assignment No. C05087 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in EPA Region 5. PRC assigned Dynamac Corporation (Dynamac), its TES 9 subcontractor, to conduct the PA/VSI for the Georgia-Pacific Corporation (GPC) facility in Kalamazoo, Michigan.

As part of the EPA Region 5 Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells

- Closed and abandoned units

- Recycling units, wastewater treatment units, and other units that EPA has generally exempted from standards applicable to hazardous waste management units

- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading-unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release to the environment of hazardous waste or constituents has occurred or is suspected to have occurred on a non-routine and nonsystematic basis. This includes any area where such a release in the future is judged to be a strong possibility.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility.
- Obtain information on the operational history of the facility.
- Obtain information on releases from any units at the facility.
- Identify data gaps and other informational needs to be filled during the VSI.

The PA generally includes review of all relevant documents in files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA.
- Identify releases not discovered during the PA.
- Provide a specific description of the environmental setting.
- Provide information on release pathways and the potential for releases to each medium.
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases.

The VSI includes interviewing appropriate facility staff, inspecting the entire facility to identify all SWMUs and AOCs, photographing all SWMUs, identifying evidence of releases, initially identifying potential sampling locations, and obtaining all information necessary to complete the PA/VSI report.

This report documents the results of the PA/VSI of the GPC facility in Kalamazoo, Michigan, RCRA ID No. MID 042 441 022. Dynamac gathered and reviewed information from files at the Waste Management, Air Quality, Surface Water Quality, and Emergency Response Divisions of the Michigan Department of Natural Resources' (MDNR) Plainwell, Michigan District office and from EPA Region 5 RCRA files.

Russ Crittenden and Valerie Farrell of Dynamac conducted the VSI on November 13, 1991. The VSI included an interview with several GPC employees including Al Campbell, Maintenance and Environmental Engineer; Al Beshire, Corporate Engineer; and Phil Hester, Environmental Engineer. The VSI also included a walk-through inspection of the facility. Dynamac observed fourteen SWMUs and three AOCs during the VSI.

Dynamac completed EPA Form 2070-12 using information gathered during the PA/VSI. This form is included in Attachment A. The VSI is summarized along with 22 inspection photographs in Attachment B. Field notes from the VSI are included in Attachment C.

2.0 FACILITY DESCRIPTION

This section describes the facility's location, past and present operations (including waste management practices), waste generating processes, release history, regulatory history, environmental setting, and receptors.

2.1 FACILITY LOCATION

The GPC facility is a paper manufacturing facility located in a mixed industrial and residential area adjacent to the Kalamazoo River. The facility is located approximately two miles east of the downtown area of the city of Kalamazoo, in Kalamazoo County, Michigan (42° 17' 10" north latitude; 85° 33' 0" west longitude (USGS, 1967)) (See Figure 1).

The GPC facility has four contiguous sections: the Mill Property, the King Highway Landfill, the Willow Boulevard Landfill, and the 'A' Landfill. The Kalamazoo River divides the facility so that the Mill Property is located north of the river, and the landfills are located south of the river. The total facility property covers approximately 100 acres (GPC, 1991c). A closed National Gypsum Corporation facility is located immediately adjacent to GPC, south of the Mill Property (See Figure 2). Access to the GPC Mill Property and to the King Highway Landfill is from King Highway. Access to the other landfills is from Willow Boulevard.

2.2 FACILITY OPERATIONS

The GPC facility produces Form Bond, Uncoated Offset, and Matte Coated Offset grades of paper (GPC, undated (a)). The facility uses purchased virgin pulp and also recycles wastepaper in its operations. GPC does not currently produce pulp from wood. The facility currently operates 2 shifts per day and employs approximately 300 persons. Total production is approximately 370 tons of paper per day (GPC, 1991c).

The first paper mill at this location was constructed by the Botsford Paper Company (Botsford) in 1892. Several other companies opened mills next to the Botsford mill in subsequent years, and in 1918 a total of five existing mills were consolidated under the Kalamazoo Paper Company name. Three of these mills remain today on the GPC facility. In the 1930s, the Kalamazoo Paper Company began to accept waste paper as a source of pulp (GPC, undated (b)). The original paper mills at the facility produced pulp from wood; the facility abandoned this process and began to purchase pulp at some time prior to 1967.

GPC purchased the Kalamazoo Paper Company facility, which included the King Highway and Willow Boulevard areas, in 1967. GPC purchased sludge lagoons belonging to the Allied Paper Company when that company closed in 1975 (GPC, 1991c). GPC calls this former lagoon area the 'A' Landfill.

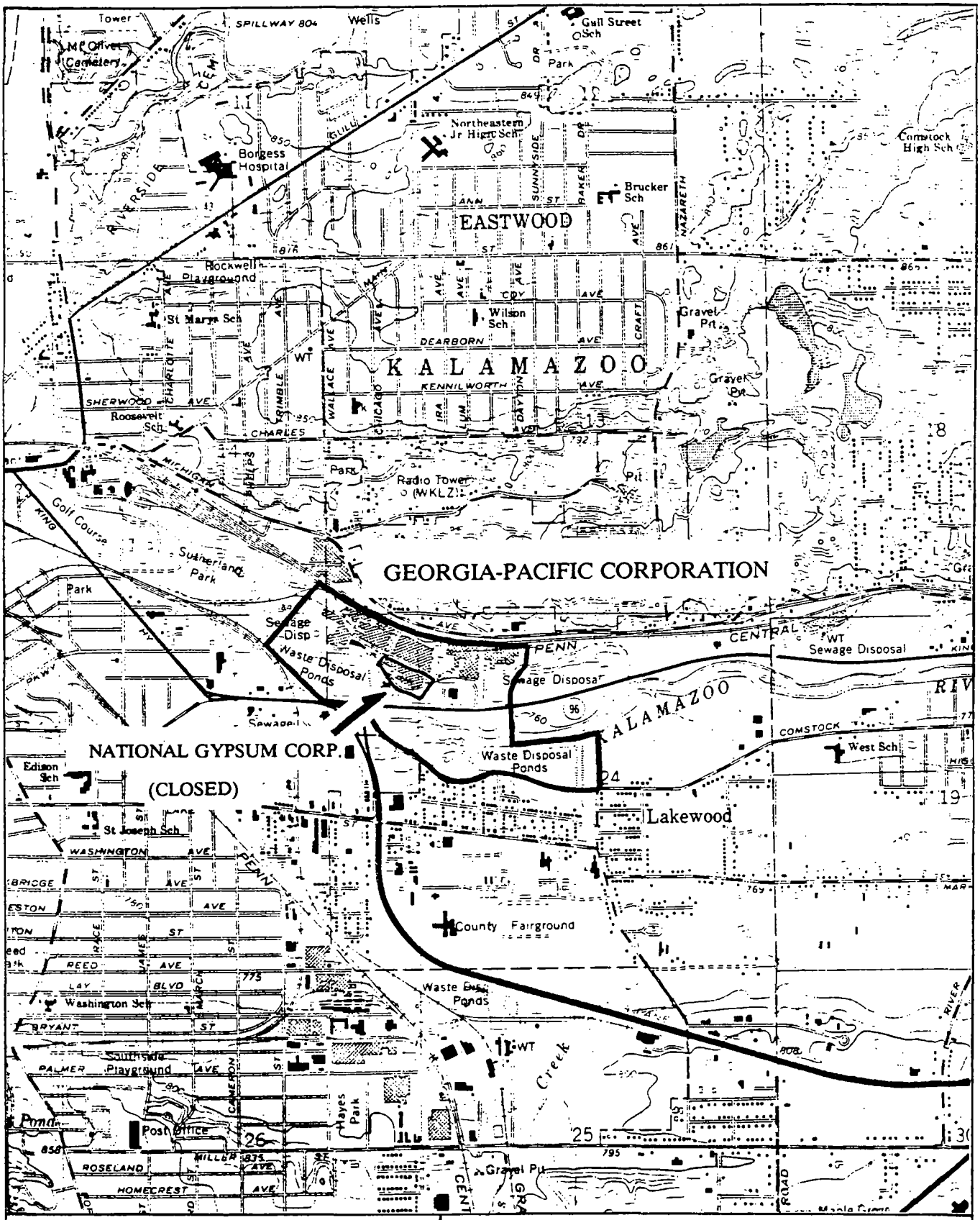


FIGURE 1
FACILITY LOCATION
GEORGIA-PACIFIC CORPORATION

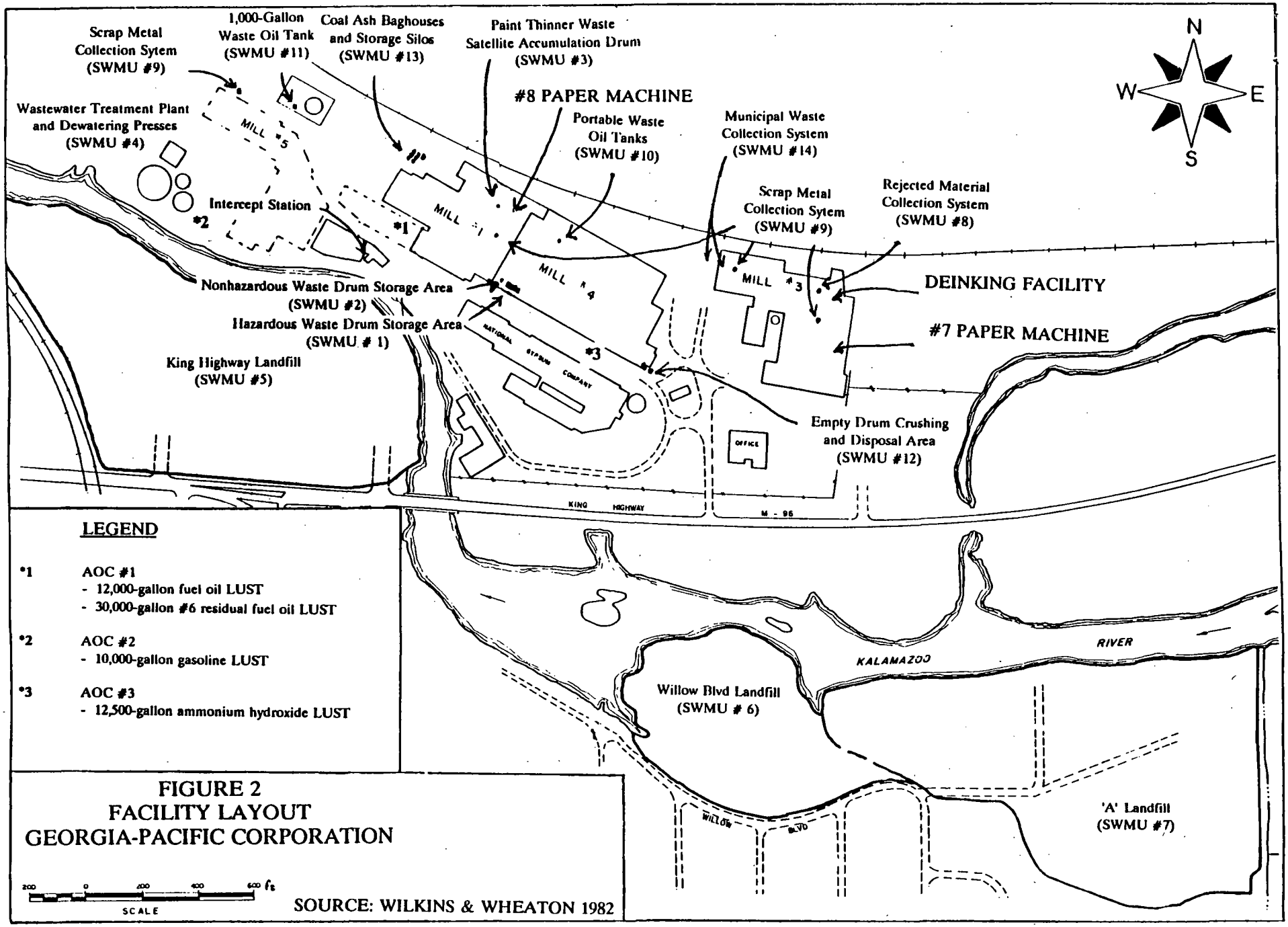


FIGURE 2
FACILITY LAYOUT
GEORGIA-PACIFIC CORPORATION

Currently, the GPC facility produces paper on two machines located in Mill Nos. 3 and 4. The de-inking of wastepaper for recycling occurs in Mill No. 3, and the resulting pulp is mixed with purchased virgin pulp for use in the paper machines. GPC manufactures paper in varying grades containing up to 50 percent recycled pulp (GPC, 1991c).

Manufacturing processes include: pulping, screening, cleaning, de-inking and bleaching of wastepaper; liquefying and blending of virgin pulp; refining, adding fillers, adding coatings, and dyeing of pulp blends; paper forming, drying, sizing, and calendaring; and rolling, cutting, packaging, and shipping the finished paper. Biocides such as methylene bis(thiocyanate) are added to prevent slime and bacteria in the pulp and paper. An on-site laboratory tests paper and runs trials of process innovations (GPC, 1991c). Regular facility maintenance of buildings, machines, and vehicles is also an ongoing process. These processes are described in detail in Section 2.3.

Wastes generated as a result of these processes include process wastewater, unused or expired hazardous and nonhazardous process chemicals, and various nonhazardous solid wastes left over from the use of raw materials (paper residuals, scrap metal, miscellaneous municipal wastes). Waste residuals are generated at the facility wastewater treatment plant (WWTP), which treats all process wastewater prior to discharge to the Kalamazoo Water Reclamation Plant (KWRP). GPC is in the process of retrofilling all of the polychlorinated biphenyl (PCB) containing transformers at the facility, thus generating PCB-containing wastes. Additionally, nonhazardous waste oils, and hazardous paint waste (D001) and paint thinner waste (D001, F003, F005) are generated during routine facility and vehicle maintenance (GPC, 1991c).

Descriptions of the SWMUs identified during the PA/VSI are provided in Table 1. Figure 2 illustrates the Mill Property and landfill area layout and shows the location and number of all SWMUs, AOCs, and the location of all past and present underground storage tanks (UST).

2.3 WASTE GENERATING PROCESSES

GPC manufactures pulp made from recycled waste paper, and blends this with purchased virgin pulp to produce several varieties of finished paper (GPC, 1991c). Table 2 lists the solid wastes associated with the waste generating processes as well as those wastes introduced during routine facility and vehicle maintenance. Figure 3 shows a schematic diagram of the de-inking and recycling process, and paper making.

Historical wastestreams from the waste generating processes include solid rejects from the recycling process; scrap metal; municipal wastes; paint wastes (D001) and paint thinner wastes (unknown constituents); waste oil accumulated from facility maintenance; empty drums; unused or expired laboratory chemicals; unused or expired process chemicals including biocides, oxidizers, dispersants, bleaches, caustics, and acids (unknown composition); process wastewater; residuals from the wastewater; coal ash from the boiler

TABLE 1
SOLID WASTE MANAGEMENT UNITS (SWMU)
GEORGIA-PACIFIC CORPORATION FACILITY

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
1.	Hazardous Waste Drum Storage Area	Yes	RCRA closed, 1985; Active for <90-day storage
2.	Nonhazardous Waste Drum Storage Area	No	Active
3.	Paint Thinner Waste Satellite Accumulation Drum	No	Active
4.	WWTP and Dewatering Presses	No	Active
5.	King Highway Landfill	No	Active
6.	Willow Boulevard Landfill	No	Inactive
7.	'A' Landfill	No	Inactive
8.	Rejected Material Collection System	No	Active
9.	Scrap Metal Collection System	No	Active
10.	Portable Waste Oil Tanks	No	Active
11.	1,000-Gallon Waste Oil Aboveground Storage Tank (AST)	No	Active
12.	Empty Drum Crushing and Disposal Area	No	Active
13.	Coal Ash Baghouses and Storage Silo	No	Active

* A RCRA hazardous waste management unit is one that currently requires or formerly required a RCRA Part A or Part B permit.

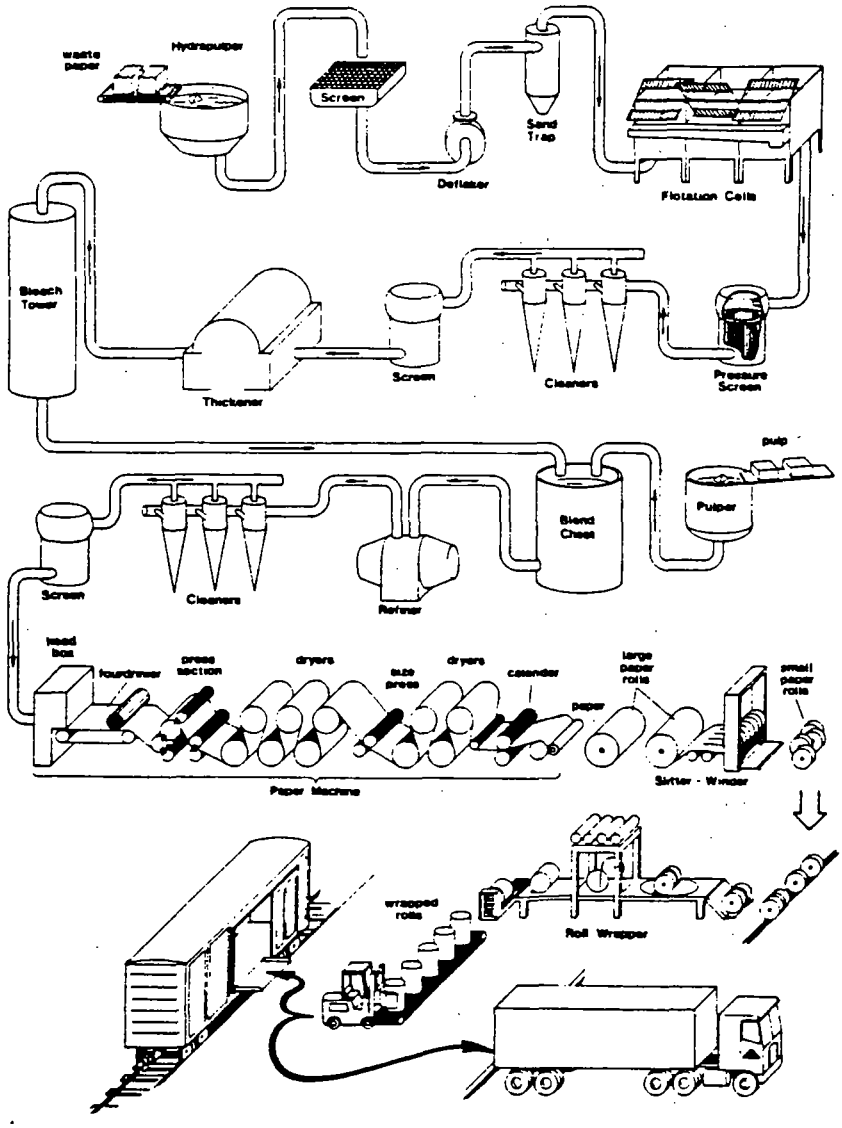
TABLE 2
SOLID WASTES
GEORGIA-PACIFIC CORPORATION FACILITY

Waste/EPA Waste Code	Source	Primary Management Unit*
Process Wastewater	De-inking and Paper Production	4
Solid Rejects	De-inking and Recycling	8, 14
Scrap Metal	Recycling and Scrap Parts	9
Residuals	WWTP	5 (** 6, 7)
Unused or Expired Process Chemicals	De-inking and Paper Production	1, 2
Unused or Expired Laboratory Chemicals	Paper and Process Testing	1, 2
Empty Drums	De-inking and Paper Production	12
Waste Oil	Facility and Vehicle Maintenance	10, 11
PCB-Containing Wastes	Facility Maintenance	1
Paint Waste (D001)	Facility Maintenance	1
Paint Thinner Waste (D001, F003, F005)	Facility Maintenance	3,1
Waste Petroleum Naphtha (D001)	Facility Maintenance	None***
Coal Ash	Plant Boiler	13

* Primary Management Unit refers to the SWMU that currently manages or formerly managed the waste.

** SWMU Nos. 6 and 7 are landfill areas which no longer accept residuals wastes.

*** Waste Petroleum Naphtha is generated in Safety-Kleen parts cleaners and is handled by Safety-Kleen upon generation.



General diagram of Mill Processes at G-P Kalamazoo

SOURCE: GPC, no date

FIGURE 3
FACILITY PROCESS DIAGRAM
GEORGIA-PACIFIC CORPORATION

house; and boiler house non-contact cooling water (GPC, 1991c). Dynamac does not have documentation of the waste streams resulting from discontinued pulping operations.

According to the Notification of Hazardous Waste Activity (EPA Form 8700-12) filed by GPC in 1980, GPC also generated various chemical wastes including the following: cyanide-containing quenching bath oils (F010); auramine (U014); formaldehyde (U122); arsenic trioxide (P012); carbon disulfide (P022); potassium cyanide (P098); sodium azide (P105); and sodium cyanide (P106) (GPC, 1980a). GPC personnel stated during the VSI that they did not know exactly how these wastes were generated, but speculated that some may have been constituents in discarded dyes and laboratory chemicals (GPC, 1991c).

All of the aforementioned historical wastestreams are currently generated at GPC with the exception of formaldehyde, quenching bath oils, auramine, arsenic trioxide, and carbon disulfide. GPC routinely generates waste petroleum naphtha (D001), paint waste (D001), and paint thinner waste containing ethyl ether and methanol (D001, F003, F005). GPC has also recently generated old stockpiled chemicals, including waste reactive cyanide (D003); waste oxidizer containing arsenic, cadmium, and silver (D001, D004, D006, D011); waste poisons containing lead, mercury, and 2,4-dinitrotoluene (D007, D009, D030); waste hydrochloric acid (D002); and waste chlorine (D003). These wastes were generated in one-time housekeeping events. The facility also generates PCB-containing wastes from retro-filling of transformers (GPC, 1991c).

Air emissions occur primarily through the boiler house stack, but three facility Safety-Kleen parts washers constitute small emission sources. Additionally, GPC is awaiting renewal of a National Pollutant Discharge Elimination System (NPDES) permit (No. MI0006190) to discharge non-contact cooling water from the boiler house through two outfalls to the Kalamazoo River. Effluent from the facility WWTP is discharged to KWRP (GPC, 1991c). The manufacturing, wastewater treatment, and maintenance operations mentioned in Section 2.2 that generate waste are described in greater detail below.

De-inking and Recycling Process

The de-inking and recycling process recovers pulp from wastepaper for use in new paper products. GPC de-inks and recycles waste paper in Mill # 3. In this process, bales of waste paper are put into a "Hydropulper" which mixes the waste paper with water, sodium hydroxide to break up ink, and a fatty acid dispersing agent. The resulting pulp goes through several stages of screening, cleaning, and trapping to remove plastic, tape, staples, large chunks, and other solid rejects. Flotation cells capture the ink in a froth which is scraped off and discharged to the facility WWTP. GPC uses peroxide and sodium hydrosulfite to brighten the pulp. Methylene bis(thiocyanate) is added during this process to prevent slime and bacteria build-up (GPC, 1991c).

Scrap metal is generated from the metal bands that hold together the bundles of wastepaper that are received daily. According to GPC personnel, the scrap metal is sometimes accumulated in a one-cubic-yard steel hopper which is a component of the Scrap Metal Collection System (SWMU No. 9). When the hopper becomes full, GPC combines it with other scrap metal generated at the facility and transports the metal off-site for recycling. At other times the scrap metal bands are combined with other unusable material included with the wastepaper and discarded as municipal waste. GPC does not know the quantity of scrap metal bands they generate; however, the total scrap metal generation rate from all sources is approximately 400,000 pounds per year (GPC, 1991c).

Solid rejects from the screening of pulp are collected in a one-cubic-yard hopper, which is a component of the Rejected Material Collection System (SWMU No. 8). Small solid rejects taken from the sand traps are accumulated in a lined fiber barrel, which is also a component of the Rejected Material Collection System (SWMU No. 8). All solid rejects are discarded as municipal waste. The facility generates approximately three cubic yards of solid rejects from the screen hopper per week, and approximately 10 pounds of solid rejects from the sand traps per day (GPC, 1991c).

Ink and other solids removed from the pulp after the initial screening and trapping are directed via the floor sewer to the facility WWTP and Dewatering Presses (SWMU No. 4). The process wastewater generated from this process also contains clays, sodium hydroxide, other chemicals added during the process, and various unknown constituents that are present in the waste paper (GPC, 1991c).

Unused and expired process chemicals are occasionally discarded, and these are accumulated in drums in the Hazardous Waste Drum Storage Area (SWMU No. 1) or the Nonhazardous Waste Drum Storage Area (SWMU No. 2). See the following Subsection, Papermaking Process, for information on wastes generated as unused or expired chemicals.

Papermaking Process

GPC purchases virgin pulp in bales bound by wire, and prepares the pulp for use by blending it with water and pulp from the de-inking plant. The operators add clay fillers, dyes and/or coatings as necessary. The facility uses ammonium hydroxide to adjust the pH of the coatings. GPC then further refines, cleans, and screens the blended pulp. The pulp is discharged from a head box onto a rapidly moving mesh wire. The paper machine removes water from the paper by drainage, pressure, and heat drying between steam-heated rollers. GPC finishes the paper by starching, calendaring (pressure smoothing), cutting, and rolling (GPC, 1991c).

The wire used to hold together the pulp bales is collected in one-cubic-yard rolling bins, which are components of the Scrap Metal Collection System (SWMU No. 9), for off-site recycling. GPC generated approximately 200,000 pounds of pulp bale wire per year (GPC, 1991c).

Fibers and other solids removed from the blended pulp are directed via sewer to the facility WWTP and Dewatering Presses (SWMU No. 4). The process water used in paper making is recycled through the system as much as possible before being pumped to the facility WWTP and Dewatering Presses. The wastewater contains clays, fibers, biocides, and other chemicals added during the process. The water may also contain a small amount of oil which leaks from the paper machines and is captured by the floor drains (GPC, 1991c).

Unused and expired process chemicals are occasionally discarded. These are accumulated in drums in the Hazardous Waste Drum Storage Area (SWMU No. 1) or the Nonhazardous Waste Drum Storage Area (SWMU No. 2). During the VSI Dynamac observed two 55-gallon drums of waste ammonium hydroxide from Ph adjustment of coatings in SWMU No. 2.

GPC has a small laboratory at the facility which tests finished paper and also develops improvements in the process which may involve testing of new chemical products. The laboratory also occasionally discards unused or expired chemicals which are stored in SWMU No. 1 or SWMU No. 2 to await transport (GPC, 1991c). In the first 10 months of 1991, GPC shipped the following hazardous wastes generated as unused or expired process and laboratory chemicals (GPC, 1991c):

Waste cyanide (D003)	4 lbs
Waste charcoal (D001)	90 lbs
Waste oxidizer (D001, D004, D006, D011)	8 lbs
Waste poison (D007, D030)	10 lbs
Waste poison (D009)	65 lbs
Waste hydrochloric acid (D002)	25 lbs
Waste mineral spirits (D001)	15 lbs
Waste chlorine (D003)	5 lbs

Wastewater Treatment

The facility WWTP and Dewatering Presses (SWMU No. 4) receive all of the process wastewater from the mills. The process water in the mills is recirculated for further use until it becomes unusable. It is then pumped to the facility WWTP and Dewatering Presses, which consist of an intercept station with a bar screen, water clarifier, thickener, and dewatering presses.

The intercept station receives wastewater from the paper mill buildings. The wastewater primarily contains inks and clays from the de-inking facility and clays and pulp fibers from the paper machines. In addition, some oils and various process chemicals enter the floor drains either in dirty process wastewater or by spillage. The intercept station screens out large impurities and fiber fragments. These solids are collected in a two-cubic-yard roll-off and discarded as municipal waste. GPC did not have an estimate of the quantity of waste generated at the intercept station (GPC, 1991c).

From the intercept station, the water is pumped to the clarifier. Solids suspended in the wastewater are flocculated with alum and settle out in the water clarifier, which discharges milky-white water from the top of the clarifier to the KWRP. GPC discharges a total of 4.5 to 5 million gallons of wastewater per day to the KWRP (GPC, 1991c).

The wet residuals are pumped to the thickener which removes more wastewater (discharged back to the clarifier) and then pumps the thickened residuals via a head tank to the dewatering presses which remove the remaining free water. Wastewater from the presses is pumped back to the thickener and the pressed residuals are piled up inside the press building (See Photo No. 8) for storage until they are hauled to the King Highway Landfill (SWMU No. 5). GPC generates a total of approximately 150 cubic yards of residuals per day (GPC, 1991c).

Facility and Vehicle Maintenance

GPC is in the process of retrofilling all PCB transformers at the GPC facility with non-PCB fluids. Seven PCB transformers remain at the facility. PCB-containing wastes are accumulated in the Hazardous Waste Drum Storage Area (SWMU No. 1) in 55-gallon drums. GPC did not have an estimate of the annual quantity of PCB wastes generated at the facility (GPC, 1991c).

Nonhazardous waste oil is generated during lubrication of various machinery, as well as during routine vehicle maintenance. This waste oil is collected in one of two 250-Gallon Portable Waste Oil Tanks (SWMU No. 10) located in the maintenance areas. When a portable tank is full, maintenance employees transfer the waste oil to a 1,000-Gallon Waste Oil Aboveground Storage Tank (AST) (SWMU No. 11) located in the northwest section of the Mill Property within the diked area surrounding an empty 500,000-gallon fuel oil tank. The oil is analyzed before it is transported off-site for recycling and is nonhazardous (KAR Laboratories, 1989). GPC did not have an estimate of the annual quantity of waste oil generated at the facility (GPC, 1991c).

GPC regularly paints machinery and parts. Painting takes place in Mill No. 1 (See Figure 2), and is done by hand with brushes. The paints and thinners used are stored in locked cabinets. Paint thinner wastes containing ethyl ether and methanol (D001, F003, F005) are accumulated in a 55-gallon satellite accumulation drum. The Paint Thinner Waste Satellite Accumulation Drum (SWMU No. 3) is located in the paint area and is kept closed and marked. When the satellite accumulation drum is full, it is transferred to the Hazardous Waste Drum Storage Area (SWMU No. 1) to await transport off-site. Paint waste (D001) is transferred directly to a 55-gallon drum in SWMU No. 1 upon generation. These wastes are currently stored for less than 90 days at the facility. In the first 10 months of 1991, GPC shipped 100 pounds of paint thinner waste containing ethyl ether and methanol (D001, F003, F005), and 300 pounds of paint waste (D001) (GPC, 1991c).

GPC maintains three Safety-Kleen parts washers at the facility for tool and part clean-up. The waste petroleum naphtha (D001) generated by these parts washers is transported off-site by Safety-Kleen and constitutes the facility's largest hazardous waste stream. In the first 10 months of 1991, GPC shipped 5,848 pounds of waste petroleum naphtha (D001). This waste is not managed in any GPC facility SWMU.

2.4 HISTORY OF DOCUMENTED RELEASES

The PA/VSI revealed several documented releases of contaminants into the environment at the GPC facility. Releases of PCBs to groundwater and surface water have occurred from facility landfills (SWMU Nos. 5, 6, and 7); there have been several releases of process water to the Kalamazoo River; and there was one release to the river of wastewater treatment plant residuals from a waste hauling truck. There have also been two reported spills of raw materials at the facility. Additionally, GPC performed remediation during removal of several leaking and/or abandoned USTs. These events are further described below. There is no documentation of a release to air from the facility, or of any odor complaints from nearby residents.

PCB Releases

From the late 1950s until the mid-1970s, the facility accepted waste carbonless copy paper for recycling into pulp for papermaking (GPC, undated (b)). At that time, this type of paper contained PCBs, primarily Aroclor 1242. PCBs contained in this waste paper were also present in the process wastestreams which were disposed of in the King Highway Lagoons (now King Highway Landfill, SWMU No. 5) and the Willow Boulevard Landfill (SWMU No. 6). In June 1986, MDNR personnel sampled sediments from the Willow Boulevard Landfill and the King Highway Lagoons in connection with ongoing studies of PCB contamination in the Kalamazoo River. The sampled sediments were in contact with the river or in eroding banks and PCBs were detected in the samples at concentrations of 35 to 47 milligrams per kilogram (mg/kg) (MDNR, 1986). As a result of these findings, MDNR requested that GPC follow up with a study plan and an immediate action including fencing and erosion control (MDNR, 1987a).

Swanson Environmental (Swanson), a GPC contractor, tested soils and residuals at the Willow Boulevard Landfill (SWMU No. 6) and reported PCB levels up to 167 mg/kg (Swanson, 1987a). In April 1987, MDNR personnel observed a number of individuals digging for worms (for fishing bait) on the Willow Boulevard Landfill. Testing of worms from the landfill revealed PCB levels up to 8.7 mg/kg (MDNR, 1987b). Testing of the blood of the worm diggers revealed no PCB levels above the normal range for individuals in Michigan (MDPH, 1987). In 1987, GPC contracted Dell Engineering to study remediation alternatives for the Willow Boulevard Landfill. Dell installed three monitoring wells at the landfill and detected PCB concentrations up to 1.35 micrograms per liter (ug/l) in groundwater (Dell Engineering, 1988). Dell's recommendations to GPC included a fabric

formed concrete cover for the landfill and sheet piling along the river to contain the PCB contamination. GPC is currently awaiting MDNR approval of this plan.

In February 1990, GPC collected residuals samples and groundwater samples from the Willow Boulevard Landfill for dioxin and furan analysis. Sample results indicated that 2,3,7,8 tetrachlorodibenzodioxin (TCDD), the most toxic cogener, was present in the residuals at concentrations up to 117 parts per trillion (ppt), but was not present in detectable quantities in groundwater. Relatively less toxic dioxins such as total octachlorodibenzodioxin (OCDD) were detected at levels up to 300,000 ppt in the residuals and 0.86 ppt in groundwater. 2,3,7,8 tetrachlorodibenzofuran (TCDF) was detected at levels up to 396 ppt in residuals, and was not detected in groundwater (GPC, 1990b).

MDNR also requested that GPC conduct further studies on the King Highway and 'A' Landfills. The King Highway Landfill (SWMU No. 5) is the only active land disposal area at the GPC facility. Most of the residuals that were placed in this area when it was used as a dewatering lagoon had been excavated and transferred to the other landfills by 1977. The current landfilling activity did not begin until 1987 (GPC, 1991c). Soil analyses from some portions of this area indicate the presence of PCBs at concentrations of up to 99 mg/kg (Swanson, 1987b). Groundwater analyses for PCBs run by MDNR were inconclusive (MDNR, 1991b).

During the 1950s and 1960s the Allied Paper Company handled PCB-contaminated wastes in the lagoons which were later purchased by GPC and used as the 'A' Landfill (SWMU No. 7). GPC installed three monitoring wells at the 'A' Landfill as part of the formal closure of the landfill in 1988. Swanson installed two additional wells in 1990 as part of a site investigation. Swanson also conducted soil sampling and found no PCBs in residuals located near the surface. However, they did detect PCB concentrations up to 14.8 mg/kg in residuals located at depths between 15 feet and 27 feet below ground surface (BGS). Monitoring well analysis results indicate the presence of PCBs in downgradient groundwater at concentrations up to 1.7 ug/l (Swanson, 1990). MDNR and GPC are pursuing further studies before closure of the 'A' Landfill is finalized (GPC, 1991c).

Process Water Releases

In 1982 and 1983, a total of three separate releases of process water from the GPC mills to the Kalamazoo River occurred. These releases totaled approximately 550 gallons, with a solids content of approximately 20 pounds. These releases occurred as a result of process water surges or stuck valves (GPC, 1982a, 1982b, 1983). GPC repaired the valves and, to correct these problems, instructed mill personnel not to discharge process water in surges (GPC, 1991c).

In May 1985, GPC released approximately 50,000 gallons of process water containing approximately 97 pounds of solids to the river as a result of a power failure which shut down the facility pumps (GPC, 1985a). MDNR demonstrated concern over the release and

required GPC to re-engineer the facility outfalls to prevent a future release. This construction was completed in 1988 (GPC, 1988b). There have been no subsequent documented releases of process water.

Other Spills

In June 1985, an estimated five pounds of residuals from the facility WWTP entered a storm drain leading to the Kalamazoo River after falling from a GPC waste hauling truck onto the roadway during rainy weather. The spill was attributed to a faulty tailgate handle on the truck (GPC, 1985b).

In March 1988, approximately 30 gallons of sodium bisulfite were spilled at the GPC facility and entered a storm sewer leading to the Kalamazoo River. The spill occurred in a loading area during a delivery (MDNR, 1988). No information on MDNR or facility follow-up to these spills was available in the GPC file information.

In July 1988, approximately 200 gallons of corrosive sodium aluminate was spilled in the Mill No. 3 receiving dock during a delivery. This spill was immediately contained with Speedi-Dri and Attapulgus clay, and did not enter storm drains or the Kalamazoo River. The spill was neutralized with alum and disposed of through the facility WWTP (GPC, 1988a). No documentation of other reported spills was present in EPA or MDNR files.

Underground Storage Tank Removals

In September 1989, GPC began the removal of two USTs (AOC No. 1) from the area immediately west of Mill No. 1. These USTs included one 12,000-gallon fuel oil UST and one 5,000-gallon kerosene UST. At the same time, GPC began removal of a 10,000-gallon gasoline UST (AOC No. 2) located immediately southeast of the facility WWTP. During the removal, GPC's contractor encountered contaminated soils near the fuel oil and gasoline USTs. GPC's contractor found no leaks or contaminated soils associated with the kerosene tank; this is the only removal which had received MDNR certification of clean closure at the time of VSI (GPC, 1991c).

According to the October 1989 Initial Abatement Measures Report filed by GPC with the MDNR, immediate abatement for the two leaking USTs was limited (GPC, 1989b). The fuel oil tank was located between railroad spurs and the excavation was halted prior to the removal of all contaminated soils to avoid undermining the tracks. Soil samples were collected from the excavation and the excavation was backfilled with clean soils. The contractor recommended soil borings and monitoring wells to determine the extent of contamination (TMI Environmental, 1990). Three monitoring wells were installed by the project consultants and quarterly monitoring of benzene, toluene, ethylbenzene, and xylene (BTEX) compounds and total petroleum hydrocarbons has not shown any detectable impact on groundwater (KAR Laboratories, 1990b).

The gasoline UST was located at an unspecified depth in contact with the water table and for this reason the contractor did not deem continued excavation the most appropriate remediation measure. Samples of pooled groundwater in the excavation indicated BTEX contamination. The excavation was left open pending further study, but was filled with clean soil after monitoring wells were installed. The excavation of the gasoline UST was filled with clean soil at a later date. All excavated soils were disposed of in an off-site landfill. The contractor recommended soil borings and monitoring wells to determine the extent of contamination (TMI Environmental, 1990). Three monitoring wells were installed by the project consultants and quarterly monitoring of BTEX compounds and total petroleum hydrocarbons has not shown any detectable impact on groundwater (KAR Laboratories, 1990b).

In August 1990, GPC removed a 12,500-gallon ammonium hydroxide UST (AOC No. 3) from an area immediately south of Mill No. 4. This UST had not been in use for at least 15 years and had only been recently "discovered" by facility maintenance personnel. During the removal GPC determined through the presence of an ammonia odor that the tank had leaked an unknown amount of ammonium hydroxide into surrounding soils. A sample from the bottom of the excavation revealed 208 mg/kg of nitrogen in ammonia form (KAR Laboratories, 1990a). The Initial Abatement Measures Report filed by GPC with the MDNR stated that abatement was limited by the presence of groundwater in the excavation, which was backfilled with clean soil (GPC, 1990a). The excavated soils were disposed of in an off-site landfill. There have been no subsequent remediation measures at this AOC (GPC, 1991c).

In September 1991, GPC removed a 30,000-gallon No. 6 residual fuel oil UST. This tank was located in the same area (AOC No. 1) as the kerosene and fuel oil tanks previously removed from west of Mill No. 1. This UST had been empty since 1982, when the facility converted its boiler to coal and gas, and had leaked oil to surrounding soils. GPC filed an Initial Abatement Measures Report with MDNR in October 1991. According to the report, all visually contaminated soils had been removed during the UST excavation and disposed of in an off-site landfill (GPC, 1991b). No analytical results from the sampling were available at the time of the PA/VSI.

2.5 REGULATORY HISTORY

RCRA

In August 1980, the GPC facility submitted a Notification of Hazardous Waste Activity to EPA identifying the facility as a generator and storage facility of a variety of wastes generated from non-specific sources (GPC, 1980a).

In November 1980, GPC submitted to EPA a Part A Permit application (Part A) identifying one hazardous waste drum storage area (SWMU No. 1). The Part A identified

the type and volume of hazardous waste to be stored in 55-gallon drums at the facility as follows (GPC, 1980b):

RCRA Waste Code	Description	Volume
D001	unspecified	5,000 gallons
D002	unspecified	500 gallons
D003	unspecified	200 gallons
D004	unspecified	200 gallons
F001	unspecified	300 gallons
F010	unspecified	200 gallons

In May 1983, MDNR issued an Interim License granting GPC interim status as a RCRA storage facility (GPC, 1991c). MDNR conducted an inspection in 1983 and noted deficiencies in the facility's training records, arrangements with local authorities, inspection logs, contingency plan, closure plan, and secondary containment in the hazardous waste drum storage area (MDNR, 1983). There is no documentation of follow-up or resolution of these issues in available file information.

Early in 1985, GPC filed a Request for Change in Status Form with EPA to change its status to generator only. In July 1985, MDNR conducted a closure inspection and found the GPC facility to be in compliance with 40 CFR 262.34 and to have conducted proper RCRA closure in accordance with the facility's 1981 closure plan (MDNR, 1985).

In January 1989 an MDNR inspection revealed that the facility was operating as a small-quantity generator and noted deficiencies with the facility's contingency plan (no emergency coordinator or emergency information) and with personnel training (MDNR, 1989b). GPC responded to these deficiencies in February 1989 (GPC, 1989a). There is no documentation in MDNR's files concerning whether MDNR followed up on the GPC letter and approved GPC's actions.

CERCLA

Due primarily to PCB contamination of sediments, EPA has placed the Portage Creek/Kalamazoo River (PC/KR) Superfund site on the National Priorities List (NPL). EPA has identified GPC as a Potentially Responsible Party (PRP) because of known releases of PCBs from the King Highway lagoons (SWMU No. 5), the Willow Boulevard Landfill (SWMU No. 6), and the 'A' lagoons (SWMU No. 7) (See Section 2.4, Release History). The PC/KR Superfund site includes the closed Allied Paper Company facility, three miles of Portage Creek, and 35 miles of the Kalamazoo River. MDNR has taken the lead for administering this site. In December 1990, GPC and two other PRPs signed an Administrative Order of Consent with MDNR. GPC is currently participating in the development of a Remedial Investigation Workplan which will focus on source areas such as the landfills as a first priority. The schedule for the RI/FS is still in the development stages, but is expected to be finalized in early 1992 (EPA, 1991 and 1992).

Clean Water Act

GPC received an NPDES permit No. 0006190 on June 28, 1974, mainly for discharges of noncontact cooling water. In 1974, the facility had a total of nine outfalls to the Kalamazoo River (MDNR, 1974). The outfalls also discharged some sanitary sewage which is now routed separately to the KWRP (GPC, 1991c). GPC last applied for renewal of their NPDES permit in 1985, and MDNR requested that the bypass sewer to the river be eliminated to prevent a future reoccurrence of the 1985 process water release to the river (See Section 2.4). The construction work was completed in 1988 (GPC, 1988b). The permit has not been re-issued; GPC is currently operating under the expired permit (GPC, 1991c). Other than process water releases discussed in Section 2.4, Release History, there is no file information indicating that there have been any NPDES permit violations from the GPC facility.

The facility currently has three outfalls. Outfall 001 discharges approximately 7.7 million gallons per day (MGD) of noncontact cooling water used in the facility boiler house. Outfall 002 is located adjacent to the cooling water intake and discharges a small quantity of wastewater used to clean the intake screen. Outfall 003 discharges intake screen shower water from the intake for the papermaking process water.

All process wastewater receives treatment in the facility clarifier prior to discharge to the KWRP. This discharge is not regulated under NPDES. On April 4, 1989, EPA Region V included the GPC facility on its list of pulp and paper mills which bleach with chlorine, and was therefore a possible source of dioxin discharges. EPA wished to regulate dioxin discharges and impose an effluent limit of 0.01 ppt of 2,3,7,8 TCDD toxicity equivalent (EPA, 1989). In 1990, GPC and KWRP began quarterly sampling of the GPC residuals and effluent, and the KWRP influent. The facility has indicated that no chlorine bleaching is performed at the facility (GPC, 1991a). GPC collected the first quarterly sample on June 26, 1990, and no TCDD or TCDF was detected. GPC collected the second sample on October 11, 1990, and this sample contained 0.006 ppt total TCDF (Triangle Labs, 1990). GPC effluent samples collected in 1991 contained between 0.005 and 0.5 ppt of hexa-, hepta-, and octa-chlorodibenzodioxins (Triangle Labs, 1991). As a result, MDNR is requiring continued sampling on an annual basis (MDNR, 1991c). None of the samples showed a TCDD toxicity equivalent of greater than 0.01 ppt.

Clean Air Act

GPC maintains one air pollution control permit for its coal-fired boiler (Permit No. 439-82). MDNR issued this permit on October 4, 1985. Prior to 1982, the facility boiler burned fuel oil. The permit limits emissions as follows:

Parameter	Quantity
Particulates	0.10 pounds (lbs) per 1,000 lbs exhaust
Sulfur dioxide	1.67 lbs per million British Thermal Units (BTU)
Visible emissions	20% opacity

An MDNR inspection of the facility in 1989 revealed that GPC was operating in compliance with this permit (MDNR, 1989a). No file information was available regarding releases to the atmosphere or permit violations.

Landfill License

The history of residuals disposal at the GPC facility is complicated. Prior to 1954, process wastewater from the Kalamazoo Paper Company was discharged directly to the Kalamazoo River. In 1954, the company constructed the original clarifier (SWMU No. 4), and excavated the four King Highway Lagoons (SWMU No. 5) for dewatering effluent from the clarifier. GPC excavated one or two lagoons per year, beginning in the early 1960s, and transported the residuals to the Willow Boulevard Landfill (SWMU No. 6) (GPC, 1991c).

Allied Paper Company operated a series of residuals lagoons located immediately east of the Willow Boulevard Landfill. In 1975, GPC purchased these lagoons and began to use the area as a landfill ('A' Landfill (SWMU No. 7)) to dispose of dried residuals from the King Highway Lagoons. The Willow Boulevard Landfill has not been used since 1975 (GPC, 1991c).

In 1977, GPC installed the present wastewater treatment system (SWMU No. 4) and eliminated the need for the residuals lagoons. GPC stopped using the King Highway Lagoons in 1977. Dewatered residuals from the new dewatering presses were hauled directly to the 'A' Landfill (SWMU No. 7) until 1987, when GPC began landfilling at the King Highway Landfill (SWMU No. 5).

The King Highway Landfill (SWMU No. 5) is the only facility landfill to have been licensed by MDNR. The license was issued in 1983 (No. 7536) and filling operations at the King Highway Landfill began in 1987. GPC has had TCLP tests run on the residuals which have determined that they are nonhazardous (KAR Laboratories, 1991).

MDNR inspected the King Highway Landfill in 1989 and found that GPC was not in compliance with the requirement that there be no impoundment of water on the landfill surface (MDNR, 1989c). MDNR found the same problem during a 1990 inspection (MDNR, 1990b). Prior to re-issuing the landfill license, MDNR required GPC to correct this problem (MDNR, 1990a). GPC removed the ponded water in early 1991 (GPC, 1991c), and MDNR renewed the license (MDNR, 1991a).

MDNR and GPC have sampled the residuals from the former dewatering lagoons which remain in the King Highway Landfill and have found that PCBs are present (Swanson, 1987a). This issue is discussed more fully in Section 2.4, Release History. Analysis of groundwater samples has revealed the presence of vinyl chloride and 1,2-dichloroethene at low concentrations (MDNR, 1990a). GPC has attributed this contamination to upgradient sources since the level of contamination is the same in upgradient and downgradient wells, and because the residuals generated at the facility do not contain these contaminants (GPC, 1991c).

Underground Storage Tanks

The GPC facility currently has one 12,000-gallon diesel fuel UST. This tank was installed in 1981 (GPC, 1991c). Since 1989, GPC has removed a total of five USTs. Four of these USTs had releases to the soil. The leaking USTs contained gasoline, fuel oil, No. 6 residual fuel oil, and ammonium hydroxide. Each removal involved some remediation of contaminated soils and monitoring wells were installed in the areas surrounding the removed petroleum USTs. The UST removal efforts are described in detail in Section 2.4, Release History. One removed tank which contained kerosene did not leak, and MDNR approved the tank closure (GPC, 1991c). The remaining tank closures have not been completed because the excavations did not remove all contaminated soils from the areas around the USTs. GPC is currently monitoring the groundwater in the areas around the petroleum USTs.

2.6 ENVIRONMENTAL SETTING

This section describes the climate, flood plain and surface water, geology and soils, and groundwater in the vicinity of the GPC facility.

2.6.1 Climate

The greater Kalamazoo area has a continental climate characterized by a wide range of temperatures between summer and winter, though the climate is somewhat modified by proximity to Lake Michigan (MDA, 1971). Average wind speed and direction is southwest at 10 miles per hour (NOAA, 1990). Precipitation is moderate and heaviest in the spring and early summer. Average annual precipitation is approximately 34 inches and evapotranspiration averages approximately 24 inches (Dell Engineering, 1988); net annual precipitation is approximately 10 inches. The one-year 24-hour rainfall is approximately 2.3 inches (NOAA, 1979).

High temperatures in the summer rarely exceed 90 degrees Fahrenheit (°F). Low temperatures in the winter are 0 °F or higher. The average annual temperature is 49.7 °F, and ranges from an average 72.9 °F in July to 24.7 °F in January (MDA, 1971).

2.6.2 Flood Plain and Surface Water

The GPC facility is located along the Kalamazoo River in the city of Kalamazoo. The southern and western portions of the GPC Mill Property are located within the 100-year flood plain of the river (FEMA, 1981). Portions of the three GPC landfills (SWMU Nos. 5, 6 and 7) are adjacent to the river and also lie in the 100-year floodplain. Surface water runoff from the GPC facility flows into the river. The Kalamazoo River flows west and discharges to Lake Michigan approximately 50 miles to the west at Saugatuck, Michigan. The Kalamazoo River in the vicinity of the GPC facility is a designated Superfund NPL site due to PCB-contaminated sediments (EPA, 1991).

2.6.3 Geology and Soils

The soils of the GPC facility are mapped as Urban land and a soil description is not available. Adjacent areas are characterized by poorly drained Glendora sandy loam in unfilled areas along the river and well-drained Oshtemo and Kalamazoo sandy loams with Urban Land in higher areas away from the river. These soils are developed in sandy fluvial sediments (SCS, 1971).

The GPC facility is located in the Kalamazoo River valley, and surficial geological materials consist of largely of fluvial deposits overlying glacial outwash sands and gravels. Occasional lenses of silt or clay are encountered in some borings at depths between 25 and 40 feet, and are generally thin and discontinuous. A basal clay layer directly overlying bedrock is also present in some area borings. The total thickness of the unconsolidated deposits is approximately 75 feet at the facility (Wilkins and Wheaton, 1982).

Bedrock underlying the unconsolidated materials in the area of GPC is the Mississippian-age Coldwater Shale (WMU, 1981). This formation is quite extensive and can be as much as 1,300 feet thick in some areas (MDNR, 1964).

2.6.4 Groundwater

A two-aquifer system has been identified for the vicinity of the GPC facility (Wilkins and Wheaton, 1982). The hydrologic system is broken down into four major units: (1) an upper aquifer, (2) an intervening semi-confining layer, (3) a lower aquifer, and (4) a basal confining layer. The mid-level semi-confining layer is a thin clayey deposit occurring at depths of 25 to 40 feet BGS in some area borings (Wilkins and Wheaton, 1982). The Coldwater Shale or a clay-rich material directly overlying the bedrock at approximately 75 feet BGS comprise the basal layer. Groundwater at the facility occurs between five feet and ten feet BGS (Wilkins and Wheaton, 1982; Dell Engineering, 1988), and corresponds to the level of the Kalamazoo River. Groundwater flow throughout the facility is towards the river. There is a municipal well drawing water from the lower aquifer and located one-eighth of a mile north of the facility. This well is theoretically upgradient since the facility lies between the well and the Kalamazoo River. However, it is not known if a cone of depression associated with this well extends to a portion of the GPC facility.

Groundwater monitoring wells have been installed in several areas throughout the facility. Wilkins and Wheaton placed six wells at the King Highway Landfill in 1981 to monitor for PCBs. Dell Engineering placed three wells at the Willow Boulevard Landfill in 1988 to monitor for PCBs. Swanson Environmental placed three wells at the 'A' Landfill in 1988, and two additional wells in 1990 to monitor for PCBs. Finally, TMI Environmental installed six wells in the vicinity of the leaking gasoline and fuel oil USTs in the western portion of the Mill Property to monitor for total petroleum hydrocarbons and BTEX compounds (See Figure 2 for monitoring well locations).

All facility monitoring wells are screened in the upper aquifer. At the landfills, the monitoring well depths range between 15 and 50 feet BGS, and most of the wells are set

at around 30 feet BGS. In the UST areas, the wells are mostly around 10 feet deep. The pattern of groundwater contamination is discussed in Section 2.4, Release History. There are low levels of PCBs (up to 1.7 ug/kg) in the groundwater below the Willow Boulevard and 'A' Landfills (SWMU Nos. 6 and 7). There is no confirmed PCB contamination of the groundwater at the King Highway Landfill (SWMU No. 5), but there is a plume of chlorinated organic compounds, which are apparently migrating to the landfill from off-site (GPC, 1991c). No contamination has been detected in monitoring wells installed in the UST areas (AOC Nos 1 and 2).

Private and municipal water supplies in the Kalamazoo area are derived exclusively from groundwater wells drawing from unconsolidated aquifers (WMU, 1981). The nearest well to the GPC facility is a municipal well located approximately one-eighth of a mile northwest (upgradient) of the facility (Verburg, 1991).

2.7 RECEPTORS

The GPC facility is partially located within the municipal boundaries of Kalamazoo, Michigan, which has a metropolitan population of approximately 90,000. Downtown Kalamazoo is located approximately two miles west of the facility.

The GPC facility is located in a mixed residential and industrial area. Private residences are located immediately south of the Willow Boulevard and 'A' Landfills. The entire Mill Property is fenced, with the exception of areas fronting the Kalamazoo River. Guards are present 24 hours per day (GPC, 1991c). The Kalamazoo River flows west through the GPC property, separating the Mill Property from the landfill areas (See Figure 2).

Potential receptors of an air release at the GPC facility include the individuals currently employed at the facility (approximately 300 persons). The potential for public contact with air contaminants is limited because the quantities of volatile hazardous substances at the facility are small and would rapidly dissipate in the outside air.

There have been past incidents of public contact with contaminants present in the soils of the Willow Boulevard Landfill. These all occurred prior to 1987, when the landfill was not fenced. Some nearby residents used the landfill property for worm digging in the past. Although worms from the landfill were tested and showed elevated levels of PCBs in their tissues, blood samples from individuals who had dug worms at the landfill did not show a consistent pattern of elevated PCB levels (MDPH, 1987). The most likely receptors of a soil release at the facility are the facility employees, and recreational boaters who gain access from the river.

The Kalamazoo River is used for industrial water supplies, fishing and recreational activities, and there is a public park located approximately one-eighth of a mile downstream of the facility (USGS, 1967). Persons using the river for such purposes are the potential

receptors of a surface water release from the facility. There are no drinking water intakes in the Kalamazoo River (Verburg, 1991).

The surrounding residences obtain their water from the municipal water supply, which derives water exclusively from glacial aquifers in the area. The nearest public well is located one-eighth of a mile north of the facility. Because of the cone of depression, there is some potential for this upgradient well to be affected by releases to groundwater at the Mill Property. Potential receptors of groundwater contamination from the facility include all residents using the municipal water supply (approximately 90,000 persons) because this water is blended from all active wells during distribution (Verburg, 1991).

Sensitive environments located in the vicinity of the GPC facility include a wetland located one-quarter of a mile north of the facility. There are also sensitive populations located within a three-quarter mile radius, including elementary schools and day care centers (USGS, 1967).

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the 13 SWMUs identified during the PA/VSI. The following information is presented for each SWMU; description of the unit, dates of operation, wastes managed, release controls, history of release, and Dynamac's observations.

SWMU No. 1 **Hazardous Waste Drum Storage Area**

Unit Description: The Hazardous Waste Drum Storage area consists of a 14-foot by 50-foot concrete-floored area enclosed inside Mill No. 4 (See Photo Nos. 1, 2, and 3). From 1983 to 1985, GPC had an Interim License from MDNR to operate this SWMU as a RCRA storage facility. GPC collected hazardous waste generated at the facility and stored the wastes in 55-gallon drums at this SWMU until arrangements were made to have the waste shipped off-site for treatment and/or disposal.

Date of Startup: The first date that this area was used to collect waste solvents is unknown. This SWMU has been active as a storage area for RCRA-defined hazardous wastes since before 1980.

Date of Closure: This SWMU was RCRA-closed with MDNR approval in 1985. From 1985 to the present, it has remained active for storage of drums of hazardous waste for less than 90 days. The facility is currently a small-quantity generator of hazardous wastes.

Wastes Managed: This SWMU routinely manages ignitable paint waste (D001) and paint thinner waste containing methanol and ethyl ether (D001, F003, F005) generated during painting of facility equipment. This SWMU also handles some nonhazardous wastes such as waste fluorescent light ballasts. A variety of occasional wastes such as waste PCB fluids from transformers, expired laboratory chemicals, and unused chemicals from process trials are also stored in this SWMU.

Release Controls: The north and east sides of this SWMU are enclosed by brick walls and the south and west sides are enclosed by a six-foot chain-link fence. There is a concrete floor in good condition with a six-inch berm, but there is a two-inch ramp at the doorway which reduces the effective height of the berm to two inches. There are no floor drains.

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: This SWMU appeared to be in good operating condition, except that a two-foot diameter hole in the roof allowed some rainwater to accumulate on the floor (See Photo No. 3). There were no noticeable odors. There were no hazardous wastes in this SWMU at the time of the VSI. The SWMU contained one 55-gallon drum of nonhazardous fluorescent light ballasts, one 20-gallon drum containing nonhazardous waste grease, and one 55-gallon drum of unused oil dry "sausages" for use in case of spills (See Photo No. 2). There was no visible evidence of spills in this SWMU. There was a sign indicating this area is used to store hazardous waste (See Photo No. 1). There were also signs restricting the area to authorized personnel.

SWMU No. 2 **Nonhazardous Waste Drum Storage Area**

Unit Description: This SWMU consists of an approximately 6-foot by 14-foot area located immediately west of the Hazardous Waste Drum Storage Area in Mill No. 4. The SWMU has a concrete floor and is fenced. Access is through an opening in the east side of the fence (See Photo No. 4). The SWMU is used for the storage of nonhazardous wastes in 55-gallon drums.

Date of Startup: This SWMU has been in use since 1985.

Date of Closure: This SWMU is currently active.

Wastes Managed: This SWMU manages occasional nonhazardous wastes consisting of expired off-specification products used in various processes. The SWMU contained two 55-gallon drums of spent ammonium hydroxide at the time of the VSI.

Release Controls: This SWMU is located indoors on a concrete floor. This SWMU is enclosed by a brick wall on the north and by a 6-foot chain link fence on the other three sides.

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: This SWMU was well kept and free of debris. At the time of the VSI this SWMU contained three drums containing dilute ammonium hydroxide, and two empty drums. The drums appeared to be in good condition. There was no evidence of any spills in this SWMU.

SWMU No. 3 **Paint Thinner Waste Satellite Accumulation Drum**

Unit Description: This SWMU is located within Mill No. 1, adjacent to the equipment painting area on the floor beneath one of the paper machines. The SWMU consists of a single closed and marked 55-gallon drum standing near a brick wall (See Photo No. 5). Paint thinner wastes are placed in the drum upon generation.

Date of Startup: It is not known for certain when this SWMU was first used. Painting of equipment has been ongoing since the plant first opened in 1892. The SWMU was in use prior to 1980.

Date of Closure: This SWMU is currently active.

Wastes Managed: This SWMU manages paint thinner waste containing ethyl ether and methanol (D001, F003, and F005).

Release Controls: This SWMU is located inside Mill No. 1 on a concrete floor. Floor drains in the facility lead to the GPC WWTP.

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: This SWMU is a single 55-gallon drum which was closed and labeled. There was no evidence of spills from this SWMU.

SWMU No. 4 **Wastewater Treatment Plant and Dewatering Presses**

Unit Description: This SWMU is located at the west end of the GPC property and consists of an intercept station with a bar screen, water clarifier, thickener, and dewatering presses. The intercept station is located in a small building south of Mill No. 1. The water clarifier is located outdoors and is 135 feet in diameter. An inactive 120-foot clarifier is located southeast of the active clarifier. The thickener is 50 feet in diameter, and is located east of the active clarifier. The two dewatering presses and residual piles are located in the WWTP building (See Figure 2).

The intercept station receives process wastewater from the paper mill buildings. The intercept station screens out large impurities and fiber fragments, and these solids are collected in a two-cubic-yard roll-off (See Photo No. 6) and disposed of as municipal solid waste (SWMU No. 14). From the intercept station, the water is pumped to the clarifier. Solids suspended in the wastewater settle out in the water clarifier, which discharges milky-white water to the Kalamazoo Water Reclamation Plant (KWRP) (See Photo No. 7). The wet residuals are pumped to the thickener which removes more water (discharged back to the clarifier) and the thickened residuals are then pumped via a head tank to the dewatering presses which remove the remaining free water. Water from the presses is pumped back to the thickener, and the pressed residuals are piled up inside the WWTP building (See Photo No. 8) where they are stored until they are hauled to the King Highway Landfill (SWMU No. 5).

Approximately 85,000 gallons of pond water from the surface of the King Highway Landfill were also treated in this SWMU in 1991 (GPC, 1991c).

Date of Startup: This SWMU was first used in 1954, when only a clarifier was used and the wet residuals were discharged to residuals lagoons located at the present King Highway Landfill (SWMU No. 5). The current system was installed and first operated in 1977 (GPC, 1991c).

Date of Closure: This SWMU is currently active. GPC has not used the original clarifier since the new clarifier was installed in 1977.

Wastes Managed: The WWTP handles process wastewater generated by the recycling and papermaking processes conducted at the Mill Property. The wastewater primarily contains inks and clays from the de-inking facility and clays and pulp fibers from the paper machines. In addition, some oils and various process chemicals enter the floor drains either in dirty process wastewater or by spillage The effluent is tested for hazardous constituents and is nonhazardous.

Release Controls: The clarifier is not equipped with oil retention booms to collect floating material, should any reach this system. The residuals are partially contained within the WWTP building, but are also spilled over an outside concrete pad and the adjacent ground when the residuals are loaded onto the trucks for transport to the landfill (See Photo No. 8). These spilled residuals are cleaned up on an occasional basis.

History of Documented Releases: No releases have been documented directly from this SWMU. However, see Section 2.4 for a discussion of process water releases to the Kalamazoo River.

Observations: This SWMU is within the fenced area of the Mill Property. The wastewater treatment plant appeared to be in good operating condition, except that a great deal of foam was being discharged to the KWRP. Some foam was observed spurting from a sewer manhole cover after discharge from the clarifier. Mr. Hester of GPC attributed this foam to the volume of process water coming from the cleanup of one of the paper machines. The concrete pad is in good condition, but there was some spillage of residuals on the ground in the area.

SWMU No. 5 **King Highway Landfill**

Unit Description: This SWMU is located southwest of the Mill Property, south of the Kalamazoo River, and north of King Highway. The landfill consists of four cells totalling 15.4 acres. Only Cells 1, 2 and 3 (12.2 acres total) are currently licensed for residuals disposal (MDNR, 1991a). Cell 1 is filled to an elevation of approximately 25 feet above the level of the Kalamazoo River and Cell 2 is now being filled to that elevation. Cell 3 will be filled in the future. The cells are constructed with steep side slopes (approximately 25% grade) and nearly level top surfaces. Residuals are hauled to the landfill from the dewatering presses (SWMU No. 4) in GPC trucks, and are dumped and spread. There is no daily cover at the landfill. GPC uses six inches of compacted soil for final cover when the licensed elevation is reached. The landfill cells lie on top of former unlined residuals dewatering lagoons, which were separated by dikes and closed in 1977. The landfill is fenced except for the river frontage.

Date of Startup: This SWMU was first operated as a series of residual lagoons in 1954. GPC stopped discharge to the lagoons in 1977 (Wilkins and Wheaton, 1981). The King Highway Landfill was first licensed in 1983, but did not accept residual wastes until 1987 (GPC, 1991c).

Date of Closure: This SWMU is currently active as a landfill. The former lagoons were not used after 1977. No formal closure was performed on the lagoons.

Wastes Managed: The residuals lagoons accepted effluent from the WWTP for dewatering. From the late 1950s to the mid-1970s Kalamazoo Paper Company and GPC accepted carbonless copy paper containing PCBs for recycling, and the process wastewater discharged to the lagoon also contained PCBs. This type of paper no longer contains PCBs and the facility wastes do not now contain PCBs (GPC, undated (b)). The residuals wastes now generated at the WWTP have been analyzed by TCLP and found to be nonhazardous (KAR Laboratories, 1991).

The King Highway Landfill is licensed to accept only residuals from papermaking at the Kalamazoo GPC facility (MDNR, 1991a).

Release Controls: The landfill is not lined and has no leachate collection system. The final cover is approximately six inches of compacted soil on the closed portion of the landfill. Closed cells are graded for runoff control. Ponded water is trucked to the facility WWTP.

History of Documented Releases:

Groundwater in the vicinity of the King Highway Landfill has been analyzed for PCBs, but the results were inconclusive (MDNR, 1991b).

Observations:

Cell 2 of the landfill was being filled during the VSI (See Photo No. 9). The residuals are not covered with soil on a daily basis, but there was no odor associated with the residuals waste. Dynamac did not observe any stressed vegetation at the landfill.

SWMU No. 6 **Willow Boulevard Landfill**

Unit Description: This SWMU covers approximately 11 acres and is located south of the Mill Property, south of the Kalamazoo River, and north of Willow Boulevard. The surface of the Willow Boulevard Landfill is irregular; the highest portion is approximately 22 feet above the level of the Kalamazoo River. The maximum depth of residuals fill is 27 feet (Dell Engineering, 1988) This SWMU is fenced except for the river frontage. The SWMU is inactive and formerly accepted dewatered residuals.

Date of Startup: The Willow Boulevard Landfill first accepted residuals from the King Highway lagoons (SWMU No. 5) in the early 1960s (GPC, 1991c). This SWMU was never a licensed landfill.

Date of Closure: This SWMU stopped receiving wastes in 1975 (Wilkins and Wheaton 1981). GPC submitted closure plans to MDNR in 1988, and submitted revisions in 1991. GPC is awaiting MDNR approval of the plans.

Wastes Managed: This SWMU was used to dispose of dewatered residuals excavated from the King Highway lagoons (SWMU No. 5). Some of these residuals contained PCBs derived from the recycling of PCB-containing carbonless copy paper in the mill papermaking operations. No analysis of the PCB-containing residuals was performed at the time these residuals were generated. Analysis of residuals in Willow Boulevard Landfill in the late 1980s indicated total PCB concentrations up to 167 mg/kg (Swanson, 1987a).

Release Controls: The landfill has no liner, leachate collection system, or cap. Some erosion of the banks along the river occurred in the past, but has been controlled by the placement of stone rip rap in zones of rapid flow (Dell Engineering, 1988).

GPC has submitted engineering plans for containment of this SWMU to MDNR, and is awaiting final approval. These plans involve driving sheet piling along the river frontage of the landfill to limit groundwater discharge from the landfill to the river, and a fabric formed concrete cap to prevent infiltration of rainwater into the fill.

History of Documented Releases:

Soils in this SWMU contain PCB concentrations up to 167 mg/kg (Swanson, 1987a). Groundwater beneath this SWMU is contaminated with PCBs at levels up to 1.25 ug/l (Dell Engineering, 1988). Groundwater discharges to the Kalamazoo River.

Observations:

Except for one discarded car frame, the landfill area was relatively free of excess debris and was covered with grass, and young trees and shrubs (See Photo No 10). Dynamac did not observe any stressed vegetation at this SWMU.

SWMU No. 7 **'A' Landfill**

Unit Description: This SWMU covers approximately 23 acres and is located southeast of the Mill Property, south of the Kalamazoo River, and between Davis Creek and the Willow Boulevard Landfill (SWMU No. 6). The 'A' Landfill is approximately 30 feet above the level of the Kalamazoo River, and the maximum depth of fill is approximately 29 feet (Swanson, 1990). This area was formerly the location of two lagoons owned by Allied Paper Company and used for residuals disposal. This SWMU is fenced except for the river frontage. The 'A' Landfill was never licensed.

Date of Startup: This SWMU was owned and operated as residuals lagoons by Allied Paper Company prior to its purchase by GPC. It is not known when the lagoons were first used. GPC purchased the area in 1975 and began landfilling residuals from the King Highway lagoon area at that time. After 1977 the landfill received residuals directly from the dewatering presses at the facility WWTP (Swanson, 1990).

Date of Closure: This SWMU stopped receiving wastes in 1987 (Swanson, 1990). There has been no formal closure of this landfill or the lagoons.

Wastes Managed: GPC used this SWMU to dispose of dewatered residuals excavated from the King Highway lagoons (SWMU No. 5) and from the WWTP dewatering presses (SWMU No. 4). Prior to 1975, Allied Paper Company disposed of residuals in lagoons in this area. Some of these residuals contained PCBs derived from the recycling of PCB-containing carbonless copy paper in the mill papermaking operations.

Release Controls: Neither the landfill nor the lagoons had a liner, leachate collection system, or cap.

History of Documented Releases: Groundwater beneath this SWMU is contaminated with PCBs at levels up to 1.7 ug/kg (Swanson, 1990). Groundwater discharges to the Kalamazoo River.

Observations: The landfill area was relatively free of excess debris and is partially covered with grass and young trees and shrubs (See Photo No 11). Some areas of the landfill are bare soil and residuals (Photo No. 12) where vegetation has not yet colonized. Dynamac did not observe any areas of stressed vegetation.

SWMU No. 8 **Rejected Material Collection System**

Unit Description: This system consists of a one-cubic-yard steel roll-off hopper and a 20-gallon fiber barrel located inside the de-inking building used to collect rejected solids from waste paper prior to use. Rejected solids are removed first by screening the pulped waste paper which emerges from the Hydropulper. Material that is too large to pass through the screen is collected in the one-cubic-yard hopper (Photo No. 13). Small and heavy materials such as sand and staples are separated by a sand trap and collected in the fiber barrel. The rejected material from both these units is taken to the trash compactor or an open 20-yard roll-off (SWMU No. 14) for disposal in a municipal landfill (GPC, 1991c).

Date of Startup: The rejected material collection system has been incorporated into the de-inking process since the current de-inking facility was installed in 1975.

Date of Closure: This SWMU is currently active.

Wastes Managed: This SWMU handles nonhazardous rejected paper solids and foreign materials such as staples, tape, plastic, sand, and paper chunks.

Release Controls: Runoff wastewater from the bins is collected in floor drains and discharged to the facility WWTP (See Photo No. 13).

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: Although the rejected material collection system is designed to remove solids without significant free water, Dynamac observed that the collection hopper beneath the screen was overflowing to the floor sewer at the time of the VSI (See Photo No. 13).

SWMU No. 9 **Scrap Metal Collection System**

Unit Description: Scrap metal, primarily consisting of bands and wire removed from bundles of wastepaper and pulp, are staged in a one-cubic-yard steel hopper, and a pair of one cubic-yard steel rolling bins (See Photo No. 14). Wastepaper bundles are opened in the de-inking facility (Mill No. 3) and pulp bundles are opened near the pulpers associated with the paper machines. When the hoppers are full, the metal is sent off-site for recycling (GPC, 1991c). There is an additional 20-cubic-yard scrap metal roll-off located near the foundation of old Mill No. 5 on the west end of the property. A large quantity of metal parts from paper machines and other equipment not currently in use are located in this area, and those parts which are discarded are placed in the roll-off for off-site recycling (See Photo No. 15).

Date of Startup: The date of startup of this SWMU is unknown.

Date of Closure: This SWMU is currently active.

Wastes Managed: This SWMU manages oil-free scrap metal for recycling.

Release Controls: The components of this unit adequately contain the oil-free solid scrap metal.

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: The components of this SWMU appeared to be in good operating condition. Dynamac did not observe any spills or inappropriate wastes around the components of this SWMU.

SWMU No. 10 **Portable Waste Oil Tanks**

Unit Description: Waste oil generated by the paper machines and facility-wide maintenance activities is collected in one of two 250-gallon portable tanks (See Photo No. 16). One of these is normally kept in Mill No. 3, but could not be located at the time of the VSI. Dynamac observed the other portable tank in the maintenance shop located in Mill No. 4. When these tanks are full, they are rolled outside and the oil is pumped into a 1,000-gallon waste oil AST (SWMU No. 11).

Date of Startup: The facility began collecting waste oil in portable tanks in 1983.

Date of Closure: This SWMU is currently active.

Wastes Managed: This SWMU manages nonhazardous waste oil generated during facility and vehicle maintenance.

Release Controls: The portable tanks are normally kept indoors on concrete paved surfaces. In case of spillage, the oil would enter the floor drains and be carried to the facility WWTP and then be discharged to the KWRP.

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: The portable waste oil tank observed by Dynamac appeared to be in good condition. There was no evidence of spillage in the area around the portable waste oil tank.

SWMU No. 11 **1,000-Gallon Waste Oil Aboveground Storage Tank**

Unit Description: The steel 1,000-gallon waste oil AST is located west of the facility boiler plant, beside a 500,000-gallon fuel oil AST that was in use until 1981. Both of these tanks are located within a large diked area (See Photo No. 17).

Date of Startup: The tank was installed in 1983.

Date of Closure: This SWMU is currently active.

Wastes Managed: All non-PCB-contaminated waste oil generated at the facility is stored at this SWMU. The waste oil in the tank is tested for contamination before it is transported off-site as nonhazardous waste (KAR Laboratories, 1989). The waste oil is recycled at an off-site facility.

Release Controls: The 1,000-gallon waste oil AST is situated inside a large concrete paved area surrounded by five-foot concrete dikes. However, the concrete floor of this area is not well maintained and is extensively cracked. Grass is growing throughout the area.

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: Dynamac observed two extensive oil stains in the area. There was one oil stain surrounding the tank (See Photo No. 17) and a second oil stain located on a concrete pad outside the diked area where the hoses used for filling and draining the tank are located. It is not known whether oil has penetrated the cracked concrete to the soil below.

SWMU No. 12 **Empty Drum Crushing and Disposal Area**

Unit Description: This SWMU, located inside and outside of Mill No. 4, consists of a drum crusher machine and a 30-cubic-yard roll-off for disposal of these crushed drums. GPC also disposes of other miscellaneous wastes in this roll-off, which is hauled to a municipal landfill (See Photo No. 18). Mr. Campbell of GPC stated during the VSI that the facility tries to purchase its required products in returnable drums whenever possible to minimize the number of discarded drums.

Date of Startup: This SWMU began operating in 1982.

Date of Closure: This SWMU is currently active.

Wastes Managed: Empty drums (containing a depth of less than one inch of product) of various purchased products (including hazardous materials such as paints, solvents, corrosive liquids and biocides) are handled in this SWMU.

Release Controls: There are no release controls in this area.

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: The area was relatively clean and well maintained. Dynamac did not observe any spillage or staining.

SWMU No. 13 **Coal Ash Baghouses and Storage Silo**

Unit Description: This SWMU is located immediately northwest and adjacent to the facility coal-fired boiler. There are six baghouses and one storage silo (See Photo No. 19). The baghouses are round towers approximately 40 feet tall and 10 feet in diameter which capture flyash from the boiler. After the flyash is settled and collected it is conveyed to the adjacent storage silo. The storage silo is a round tower approximately 40 feet tall which stores flyash from the baghouses and bottom ash directly from the boiler. Trucks are loaded with the ash under the storage silo, and the ash is hauled to a municipal landfill. The SWMU is located outdoors on a concrete pad.

Date of Startup: This SWMU was installed in 1982.

Date of Closure: This SWMU is currently in use.

Wastes Managed: This SWMU handles flyash and bottom ash from the facility coal-fired boiler.

Release Controls: The components of this SWMU are sealed and adequately contain the ash. The loading area is concrete and Mr. Hester of GPC stated that the facility uses water sprinklers during truck loading of ash to keep down dust.

History of Documented Releases: There have been no documented releases from this SWMU.

Observations: The SWMU appeared to be in good condition. Dynamac did not observe any coal ash on the ground in the vicinity of this SWMU.

4.0 AREAS OF CONCERN

Dynamac identified three AOCs during the PA/VSI of the GPC facility. All three are former locations of USTs. The three AOCs are west of Mill No. 1 (AOC No. 1), east of the WWTP (AOC No. 2), and south of Mill No. 4 (AOC No. 3). GPC excavated and removed contaminated soil from each of these locations. The AOCs are discussed below.

AOC No. 1 Fuel Oil and No. 6 Residual Fuel Oil UST Area

In September 1989, GPC began the removal one steel 12,000-gallon fuel oil UST and one 5,000-gallon kerosene UST from the area immediately west of Mill No. 1 (See Photo No. 22). In September 1991, GPC removed a 30,000-gallon No. 6 residual fuel oil UST from this same area. GPC contractors visually inspected and sampled the soils around the kerosene UST and found no impact from leaking product, and this UST received clean closure approval from MDNR. The kerosene UST was located within AOC No. 1, but has not contributed to the concern. The fuel oil USTs had leaked and contaminated surrounding soils. All visibly contaminated soils around the 30,000-gallon UST were excavated, but the 12,000-gallon fuel oil UST was located between railroad spurs and the risk of undermining the tracks imposed limits on the excavation of contaminated soils. GPC installed monitoring wells in this area, and no impact on the groundwater has been observed in quarterly sample results from 1990 and 1991. This area is designated as an AOC because contaminated soils are still present, with the potential to release contamination to groundwater in the future.

AOC No. 2 Gasoline UST Area

AOC No. 2 is the former location of a leaking steel 10,000-gallon gasoline UST, immediately east of the facility WWTP (See Photo No. 23). During the September 1989 removal, GPC contractors encountered contaminated soils in contact with groundwater. The GPC contractors did not complete excavation of impacted soils because groundwater occurred at such a shallow depth in this area. GPC installed groundwater monitoring wells, and no impact has been noted in sample results. This area is designated as an AOC because contaminated soils are still present, with the potential to release contamination to groundwater in the future.

AOC No. 3 Ammonium Hydroxide UST Area

In August 1990, GPC removed a steel 12,500-gallon ammonium hydroxide UST from an area immediately south of Mill No. 4 (See Photo No. 24). This UST had not been in use for at least 15 years and had only been recently 'discovered' by facility maintenance personnel. Odors and sample results indicated that the UST had leaked nitrogen in ammonia form into surrounding soils at levels up to 208 mg/kg. Initial abatement was limited by the presence of groundwater in the excavation, which was backfilled with clean soil. This area is designated an AOC because there has been no MDNR approval of the removal and no monitoring of groundwater to determine if there has been a release.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 13 SWMUs and three AOCs at the Georgia-Pacific facility. Background information on the facility's location, operations, waste generating processes, history of documented releases, regulatory history, environmental setting, and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is discussed in Section 3.0. AOCs are discussed in Section 4.0. Following are Dynamac's conclusions and recommendations for each SWMU and AOC. Table 3 identifies the SWMUs and AOCs at the GPC facility and suggested further actions.

SWMU No. 1 **Hazardous Waste Drum Storage Area**

Conclusions: The Hazardous Waste Drum Storage Area is well maintained with the exception of a leaking roof. The area has adequate capacity for storage of the occasional hazardous wastes generated, although the effective berm is only two inches high. The SWMU is locked and has signs restricting access. The wastes managed in this SWMU are generated during facility maintenance (painting) activities and from spent or unused process and laboratory chemicals.

The potential for release to the air, soil, groundwater, and surface water is low. During the VSI, Dynamac observed that all hazardous wastes were stored in closed 55-gallon drums in good condition. The SWMU is indoors, concrete-floored, and bermed (See Photo Nos. 1 and 3). No releases have been documented. "Oil dry" is kept in the area to contain any spills.

Drums containing nonhazardous waste were located in this area along with drums of hazardous waste (See Photo No. 1). One 55-gallon drum containing hazardous waste was not marked or labelled (See Photo No. 3).

Recommendations: No further actions are recommended at this time.

RELEASED
DATE 2-4-99
RIN # 866-99
INITIALS MU

TABLE 3
SWMU AND AOC SUMMARY

Solid Waste Management Unit	Operational Dates	Evidence of Release	Suggested Further Action
1. Hazardous Waste Drum Storage Area	Unknown to Present*	None Documented.	None.
2. Nonhazardous Waste Drum Storage Area	1985 to Present	None Documented.	None.
3. Paint Thinner Waste Satellite Accumulation Drum	Unknown to Present	None Documented.	None.
4. Wastewater Treatment Plant and Dewatering Presses	1954 to Present	Dewatered residuals spilled on ground.	Contain spills of WWTP residuals.
5. King Highway Landfill	1954 to Present	PCBs in soil and river sediments.	Continue PCB monitoring, develop remediation plan.
6. Willow Boulevard Landfill	1960s to 1975	PCBs in soils, river, and groundwater.	Continue monitoring and developing remediation plan.
7. 'A' Landfill	Unknown to 1987	PCBs in soils, river, and groundwater.	Continue PCB monitoring, vegetate surface, and develop remediation plan.
8. Rejected Material Collection System	1975 to Present	None Documented.	None.
9. Scrap Metal Collection System	Unknown to Present	None Documented.	None.
10. Portable Waste Oil Tanks	1983 to Present	None Documented.	None.
11. 1,000-Gallon Waste Oil AST	1983 to Present	Oil stain on cracked concrete pad.	Sample soils and clean up oil stain.
12. Empty Drum Crushing and Disposal Area	1982 to Present	None Documented.	None.
13. Coal Ash Baghouses and Storage Silo	1982 to Present	None Documented.	None.

* SWMU No. 1 underwent MDNR-approved RCRA-closure in 1985 and is currently used to store hazardous waste for less than 90 days.

TABLE 3 - continued
SWMU AND AOC SUMMARY

Area of Concern	Operational Dates	Evidence of Release	Suggested Further Action
1. Fuel Oil and No. 6 Residual Fuel Oil UST Area	Unknown to 1989 and 1991	Contaminated soils.	Continue groundwater monitoring.
2. Gasoline UST Area	Unknown to 1989	Contaminated soils.	Continue groundwater monitoring.
3. Ammonium Hydroxide UST Area	Unknown to 1990	Contaminated soils.	Initiate soil borings and groundwater monitoring.

SWMU No. 2 **Nonhazardous Waste Drum Storage Area**

Conclusions: This SWMU is used to store nonhazardous wastes in 55-gallon drums. It is located indoors adjacent to SWMU No. 1.

The potential for release to the air, soil, groundwater, and surface water is low. The SWMU is located indoors on a concrete floor and well lit. There is a leaky roof. "Oil-dry" is kept in the area to contain any spills. All wastes are stored in closed drums.

Recommendations: No further actions are recommended at this time.

SWMU No. 3 **Paint Thinner Waste Satellite Accumulation Drum**

Conclusions: This SWMU is located within the maintenance area of Mill No. 4. The drum is clearly labeled "Flammable Paint Waste" (See Photo No. 4) and there are "No Smoking" signs posted in the area. The drum is kept closed and is in good condition.

The potential for release to the air, soil, groundwater, or surface water is low. The drum is closed and kept indoors on a concrete floor. There have been no documented releases from this SWMU.

Recommendations: No further actions are recommended at this time.

SWMU No. 4 **Wastewater Treatment Plant and Dewatering Presses**

Conclusions: This SWMU is located at the west end of the Mill Property. It receives all of the process wastewater from the de-inking and papermaking processes, and also from the floor sewers in the mills. Effluent from this SWMU is discharged to the KWRP, and dewatered residuals are hauled to the King Highway Landfill (SWMU No. 5).

Dynamac observed that residuals had spilled on soils in the area around the loading area. The potential for release to the air, groundwater, and surface water is low. No volatile or hazardous substances are handled at this SWMU. However, the WWTP clarifier is not equipped with oil retention booms to collect any floating material which might enter the system from a spill on the floor of one of the mills. The effluent discharged to KWRP is monitored daily for

oil, oxygen demand, and other parameters. The KWRP can accommodate up to 100 mg/l of oil, and there is no documentation that this limit has been exceeded in the facility effluent. No other releases have been documented.

Recommendations: Dynamac recommends that some measures be taken to control the spread of residuals on the ground, such as expanding the concrete pad, more frequent cleaning up of this area, and/or constructing a berm around the pad.

SWMU No. 5 **King Highway Landfill**

Conclusions: This SWMU is located south of the Kalamazoo River and occupies approximately 15.4 acres. This area was used from 1954 to 1977 as a series of lagoons for dewatering of residuals from the WWTP (SWMU No. 4), but has only accepted dewatered residuals since 1987. Residuals remaining from pre-1977 disposal contain PCBs. The landfill is active and licensed. There is no liner or leachate collection system. The SWMU is fenced, except along the Kalamazoo River. There is no daily cover. Only facility-generated pulp-related wastes are landfilled. Recent problems involving ponded water on the surface of the landfill have been corrected. Groundwater monitoring wells have been installed, but there has been no confirmed release of PCBs to groundwater. Six inches of soil is used for final cover (GPC, 1991c).

The potential for release to the air is low. No volatile substances are handled at this SWMU. There is documented PCB soil contamination. Because of the documented release to soils and the high water table at the landfill, there is a high potential for a release to groundwater, but no groundwater releases have been documented. There is also a documented release of contaminated soils to the Kalamazoo River, which is a NPL Superfund site in this area.

Recommendations: Dynamac recommends that GPC continue to comply with the conditions of the landfill license and monitor groundwater for PCBs. Dynamac also recommends that remediation plans for the PCB-containing residuals remaining at the SWMU be developed.

SWMU No. 6 **Willow Boulevard Landfill**

Conclusions: This SWMU is located south of the Kalamazoo River and east of SWMU No. 5, and consists of an inactive 11-acre landfill. This SWMU received dewatered residuals excavated from the old King Highway lagoons (SWMU No. 5) until 1975. The landfill was not permitted, and has no liner or leachate collection system. Groundwater monitoring wells have been installed.

Residuals disposed of at this SWMU contained PCBs, and there is documented soil, groundwater, and surface water contamination as a result of releases from this SWMU. The potential for release to the air is low. No volatile substances are handled at this SWMU. The facility has drawn up engineering plans for containment of the wastes in the landfill.

Recommendations: Dynamac recommends that the facility continue to monitor groundwater for PCBs and work with the MDNR on closure and remediation of the landfill.

SWMU No. 7 **'A' Landfill**

Conclusions: This SWMU is another residuals landfill located south of the Kalamazoo River. This 23-acre landfill was operated as a series of dewatering lagoons in the past by Allied Paper Company. GPC used the landfill from 1975 to 1987. The landfill was not licensed and did not have a liner or leachate collection system. Some slopes on the landfill are not vegetated.

The potential for release to the air from this SWMU is low. No volatile substances were handled at this SWMU. Residuals disposed of here by Allied Paper Company contained PCBs which have migrated to soils and groundwater. Groundwater monitoring wells have been installed. The potential for release to surface water is high due to the proximity to the Kalamazoo River and the bare slopes.

Recommendations: Dynamac recommends continued groundwater monitoring for PCBs and an effort to promote vegetation growth on the bare areas. Dynamac also recommends that remediation plans for the PCB-containing residuals remaining at the SWMU be developed.

SWMU No. 8 **Rejected Material Collection System**

Conclusions: This SWMU consists of a hopper and tub which collected rejected material from the wastepaper de-inking process, and a 40-cubic-yard roll-off for disposal. The roll-off is hauled to a municipal landfill for disposal.

The potential for release to the air, soil, ground water, or surface water is low. The SWMU is located indoors except for the roll-off. Spills are directed to the floor sewer and the WWTP intercept station. There have been no documented releases from this SWMU.

Recommendations: No further actions are recommended at this time.

SWMU No. 9 **Scrap Metal Collection System**

Conclusions: This SWMU consists of two rolling bins, one steel hopper and a 30-cubic-yard roll-off. Scrap metal is generated from bands holding purchased bundles of wastepaper, wire holding bales of purchased pulp, and miscellaneous scrap stored outside on the mill grounds.

The potential for release to the air, soil, groundwater, or surface water from this SWMU is low. The oil-free scrap is adequately contained in the SWMU. No releases have been documented.

Recommendations: No further actions are recommended at this time.

SWMU No. 10 **Portable Waste Oil Tanks**

Conclusions: Waste oil generated by facility and vehicle maintenance activities is collected and stored in two portable 250-gallon tanks prior to being transferred to a 1,000-gallon waste oil AST (SWMU No. 10).

The potential for release to the air, soil, groundwater, or surface water from this SWMU is low. The tanks observed by Dynamac appeared to be in good condition. Potential spills would be contained with available "oil-dry." No releases have been documented.

Recommendations: No further actions are recommended at this time.

SWMU No. 11 **1,000-Gallon Waste Oil Above Ground Storage Tank (AST)**

Conclusions: This SWMU is located inside a diked area surrounding an unused 500,000-gallon fuel oil storage tank.

There is a high potential for release to the air, soil, and groundwater from this SWMU. The 1,000-gallon waste oil AST is situated inside a large concrete paved area surrounded by five-foot concrete dikes, but the concrete is cracked and there is a large oil stain around the tank. Dynamac also observed a stain on a concrete area near the draining and filling pipes. The potential for a release to surface water is low because the area is contained.

Recommendations: Dynamac recommends a cleanup of the oil stains and an investigation of the possibility of a release of oil to the soil and groundwater.

SWMU No. 12 **Empty Drum Crushing and Disposal Area**

Conclusions: This SWMU consists of an empty drum crusher and a 40-cubic-yard disposal roll-off. The drums are emptied by all practical means, but not washed (GPC 1991c). A variety of process chemicals are purchased in these drums.

The potential for release to the soil, groundwater, or surface water from this SWMU is low. The SWMU manages empty drums. The roll-off provides adequate containment and no releases have been documented. The potential for release to the air is moderate. The drums are empty, but may contain volatile residuals. In addition, the roll-off is located outside and open to the atmosphere.

Recommendations: No further actions are recommended at this time.

SWMU No. 13 **Coal Ash Baghouses and Storage Silo**

Conclusions: This SWMU manages flyash and bottom ash from the coal-fired boiler. There are six baghouses and one storage silo. The combined ash is off-loaded onto trucks from the storage silo. Water sprinklers are used to control dust during off-loading.

The potential for release to the air, soil, groundwater, or surface water from this SWMU is low. The SWMU is well maintained and Dynamac did not observe any ash on the ground in the area. No releases have been documented.

Recommendations: No further actions are recommended at this time.

AOC No. 1 **Fuel Oil and No. 6 Residual Fuel Oil UST Area**

Conclusions: This AOC consists of the former location of a 12,000-gallon fuel oil UST which was removed in 1989 and a 30,000-gallon No. 6 residual fuel oil UST which was removed in 1991. AOC No. 1 is located immediately west of Mill No. 1. Soils in the vicinity of both of these tanks were found to contaminated. A 5,000-gallon kerosene UST was also removed from this area in 1989, but there was no evidence of contaminated soils in the area around this tank.

GPC did not remove all the contaminated soils from this AOC because of the risk of undermining adjacent railroad tracks. GPC installed monitoring wells, and quarterly sampling of the wells has not yet revealed any groundwater contamination.

Recommendations: Dynamac recommends that GPC continue monitoring groundwater for BTEX compounds and total petroleum hydrocarbons until it is clear that there will be no release from the contaminated soils remaining in the area.

AOC No. 2 **Gasoline UST Area**

Conclusions: This AOC consists of the former location of a 10,000-gallon gasoline UST which was removed in 1989 from the area immediately east of the facility WWTP. Soils in the vicinity of the UST were found to be contaminated, and groundwater encountered in the removal excavation also contained gasoline.

GPC did not remove all contaminated soils from this area because of the presence of shallow groundwater. GPC installed monitoring wells, and quarterly sampling of the wells has not yet revealed any groundwater contamination.

Recommendations: Dynamac recommends that GPC continue monitoring groundwater for BTEX compounds and total petroleum hydrocarbons, and if contamination is found, develop a remediation plan.

AOC No. 3 **Ammonium Hydroxide UST Area**

Conclusions: This AOC consists of the former location of a 12,500-gallon ammonium hydroxide UST which was removed in 1990 from the area immediately south of Mill No. 4. Soils in the vicinity of the UST were found to contaminated.

GPC did not remove all contaminated soils from this area because of the presence of shallow groundwater. GPC has not installed monitoring wells, and it is not known whether groundwater is contaminated.

Recommendations: Dynamac recommends that GPC install soil borings and wells to monitoring groundwater, and, if contamination is found, develop a remediation plan.

REFERENCES

Dell Engineering, 1988. "Report on Management Options at Willow Boulevard For Georgia-Pacific Corporation, Kalamazoo, Michigan," April, 1988.

U.S. Environmental Protection Agency (EPA), 1989. Letter to Paul Zugger, MDNR, April 4.

EPA, 1991. Therese Van Donsel, Remedial Response, telephone conversation with Russ Crittenden, Dynamac, December 4.

EPA, 1992. Therese Van Donsel, Remedial Response, telephone conversation with Russ Crittenden, Dynamac, January 28.

Federal Emergency Mapping Agency (FEMA), 1981. Flood Insurance Rate Map, Township of Kalamazoo, Michigan.

Georgia-Pacific Corporation (GPC), 1980a. Notification of Hazardous Waste Activity (EPA Form 8700-12), August 13.

GPC, 1980b. RCRA Part A Permit Application, November 19.

GPC, 1982a. Paul Stofer, Engineer, letter to Roger Przybysz, MDNR, March 23.

GPC, 1982b. Paul Stofer, Engineer, letter to Roger Przybysz, MDNR, April 30.

GPC, 1983. Paul Stofer, Engineer, letter to Roger Przybysz, MDNR, May 9.

GPC, 1985a. Rodney Woods, letter to John Vollmer, MDNR, May 14.

GPC, 1985b. Rodney Woods, letter to John Vollmer, MDNR, June 19.

GPC, 1988a. Al Campbell, Engineer, GPC, letter to Jeffrey McManus of MDNR, April 19.

GPC, 1988b. Al Campbell, letter to Greg Danneffel, MDNR, July 18.

GPC, 1989a. Phil Hester, Engineer, letter to Lynn Spurr, MDNR, February 24.

GPC, 1989b. Phil Hester, Engineer, "Confirmed Release 20 Day Response Initial Abatement Steps," October 4.

GPC, 1990a. Phil Hester, Engineer, "Ammonia UST Initial Abatement Measures Report," June, 1990.

REFERENCES (continued)

GPC, 1990b. Thomas Sullivan, Engineer, letter to Christine Waggoner, MDNR, July 16.

GPC, 1991a. Phil Hester, Engineer, Letter to Rohel Amundson, Kalamazoo Water Reclamation Plant, July 18.

GPC, 1991b. Phil Hester, Engineer, "Initial Abatement Report for the Confirmed Release Associated With The Removal/Disposal of a 30,000 Gallon Number 6 Residual Fuel Oil Underground Storage Tank," October 11.

GPC, 1991c. Information provided to Dynamac during PA/VSI.

GPC, undated (a). "Georgia-Pacific Corporation Kalamazoo Paper Division," booklet describing facility history and processes.

GPC, undated (b). "Georgia-Pacific Corporation Kalamazoo Paper Division, Willow Boulevard Site Background Information"

KAR Laboratories, 1989. Analytical Results, EP-Toxicity Test of Waste Oil, May 16.

KAR Laboratories, 1990a. Analytical Results - Ammonia UST, August 31.

KAR Laboratories, 1990b. Analytical Results - Quarterly groundwater sampling, November 30.

KAR Laboratories, 1991. Analytical Results - Toxicity Characteristics Leaching Procedure on Paper Residuals, May 24.

Michigan Department of Agriculture (MDA), 1971. Climate of Michigan, Revised Edition.

Michigan Department of Natural Resources (MDNR), 1964. "Stratigraphic Succession in Michigan," Chart.

MDNR, 1974. Roger Przybysz, briefing memo concerning GPC, April 24.

MDNR, 1983. Lynn Spurr, letter to Paul Stofer, GPC, June 27.

MDNR, 1985. Cheryl Howe, Memo to Lynn Spurr, MDNR, July 17.

MDNR, 1986. William Creal, Interoffice Communication to Fred Morley, MDNR, December 4.

MDNR, 1987a. Paul Blakeslee, Supervisor, Region III, letter to Al Campbell of GPC, April 17.

MDNR, 1987b. William Creal, Interoffice Communication to Rich Powers, MDNR, October 22.

MDNR, 1988. Fred Morley, telephone conversation with Al Campbell, GPC, March 22.

MDNR, 1989a. Dale Turton, letter to Phil Hester, GPC, January 23.

MDNR, 1989b. Lynn Spurr, letter to Phil Hester, GPC, January 31.

MDNR, 1989c. Evaluation Report - King Highway Landfill, August 7.

MDNR, 1990a. Richard Sadowski, letter to Phil Hester, GPC, December 4.

MDNR, 1990b. Evaluation Report - King Highway Landfill, December 11.

MDNR, 1991a. Solid Waste Disposal Area Permit for King Highway Landfill, January 11.

MDNR, 1991b. Lee Anne Byrd, Waste Management Division, letter to Phil Hester of GPC, July 17.

MDNR, 1991c. Sylvia Heaton, Interoffice Communication to Greg Danneffel, MDNR, September 10.

Michigan Department of Public Health (MDPH), 1987. Adrian Oudbier, letter to Patrick Krause, Kalamazoo County Department of Human Services, September 2.

National Oceanic and Atmospheric Administration (NOAA), 1979. Climatic Atlas of the U.S., Ashville, NC.

NOAA, 1990. Local Climatological Data from 1990 (Kalamazoo, MI).

Soil Conservation Service (SCS), 1977. U.S. Department of Agriculture, Soil Survey of Kalamazoo County, Michigan.

Swanson Environmental, Inc. (Swanson), 1987a. Analytical Report - King Highway Landfill soils, May 1.

Swanson, 1987b. "Site Investigation, Willow Boulevard Landfill," GPC, August, 1987.

REFERENCES (continued)

Swanson, 1990. " 'A' Site Investigation, Kalamazoo, Michigan," October 1.

TMI Environmental, 1990. "Soil and Groundwater Investigation for Potential Petroleum Contamination with Subsequent Tank Removal," November 27.

Triangle Labs, 1990. PCDD/PCDF 2378X Analysis, November 8.

Triangle Labs, 1991. PCDD/PCDF 2378X Analysis, April 30.

U.S. Geological Survey (USGS), 1967. 7.5 Minute Series Topographic Map, Kalamazoo, Michigan Quadrangle, 1:24,000. Photorevised 1973.

Verburg, Gary, 1991. Kalamazoo City Utilities, telephone conversation with Deborah Hall, Dynamac, October 15.

Wilkins and Wheaton, Inc., 1982. "Hydrogeological Investigation for the Georgia-Pacific Corporation, Kalamazoo Paper Division King Highway Site," February, 1982.

Western Michigan University (WMU), 1981. Hydrogeologic Atlas of Michigan, Kalamazoo, MI.

ATTACHMENT A

EPA PRELIMINARY ASSESSMENT
FORM 2070-12

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

EPA

I. IDENTIFICATION
01 STATE: MI | 02 SITE NUMBER: MID042441022

II. SITE NAME AND LOCATION

01 SITE NAME	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
Georgia-Pacific Corporation	2426 King Highway

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Kalamazoo	MI	49001	Kalamazoo		

09 COORDINATES: LATITUDE 42 17 10 0 | LONGITUDE 085 33 00

10 DIRECTIONS TO SITE (Starting from nearest public road):
Facility entrance is ¼ mile west of intersection of Business I-94 and King Highway in Kalamazoo.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
Georgia-Pacific Corporation	2426 King Highway

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Kalamazoo	MI	49001	(616) 382-2890

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)
Same as owner.	

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
			( )

13 TYPE OF OWNERSHIP (Check one)
XX A. PRIVATE ☐ B. FEDERAL _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
XX A. RCRA 3010 DATE RECEIVED: 11 13 80 (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
XX YES DATE 11 13 91 (MONTH DAY YEAR) ☐ NO

BY (Check all that apply)
☐ A. EPA XX B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: Dynamac Corporation (Specify)

CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)	03 YEARS OF OPERATION
X A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN	~ 1892 (BEGINNING YEAR) | Present (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN OR ALLEGED
Hazardous wastes generated by GPC include paint waste (D001), paint thinner waste (D001, F003, F005), waste petroleum naphtha (D001 , plus occassional laboratoy chemicals and PCB wastes.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Documented releases of PCBs to soil, groundwater, and surface water from facility landfills. Low potential for air releases. Facility is a PRP at Portage Creek/ Kalamazoo River NPL site. Remedial Investigation Work Plan is in preparation.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 3 - Waste Information and Part 4 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) XX ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspection on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Kevin Pierard	U.S. EPA REGION V	(312) 886-4448

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Russ Crittenden		Dynamac Corp.	(312) 466-0222	11 13 91 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MI	MID042441022

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

XX A SOLID — E SLURRY
B POWDER, FINES — X F LIQUID
X C SLUDGE — G GAS
D OTHER _____ (Specify)

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____
CUBIC YARDS Unknown
NO OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

XX A TOXIC — E SOLUBLE — I HIGHLY VOLATILE
B CORROSIVE — F INFECTIOUS — J EXPLOSIVE
C RADIOACTIVE — G FLAMMABLE — K REACTIVE
D PERSISTENT — X H IGNITABLE — L INCOMPATIBLE
M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE (TOXIC)	150	Cubic Yards	Daily generation rate of paper residuals (formally contained PCBs).
OLW	OILY WASTE			
SOL	SOLVENTS (IGNITABLE)	6,000	Pounds	Annual generation rate.
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS (TOXIC)	Unknown		Occassional PCB wastes from trans-transformers.
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
SLU	PCBs		Landfill in 1950s & 60s	167	mg/kg (soil)
				1.7	mg/l (GW)
SOL	Waste petroleum naphtha (D001)		Safety-Kleen parts washers	NA	
SOL	Paint thinner wastes (D001, F003, F005)		SO 1 storage	NA	
OCC	PCBs		SO 1 storage	NA	

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	NA		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sampling results)

EPA and MDNR files.
VSI conducted 11/13/91.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: MI
02 SITE NUMBER: MID042441022

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION
02 [X] OBSERVED (DATE 1988) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 90,000
04 NARRATIVE DESCRIPTION

Documented release of PCBs to groundwater from facility landfills. There is a potential for municipal wells to be impacted by this release.

01 [X] B. SURFACE WATER CONTAMINATION
02 [X] OBSERVED (DATE 1988) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0
04 NARRATIVE DESCRIPTION

PCB contaminated sediments in Kalamazoo River as a result of erosion from facility landfill.

01 [ ] C. CONTAMINATION OF AIR
02 [ ] OBSERVED (DATE) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION

None.

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS
02 [ ] OBSERVED (DATE) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED:
04 NARRATIVE DESCRIPTION

None.

01 [X] E. DIRECT CONTACT
02 [ ] OBSERVED (DATE) [ ] POTENTIAL [X] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 20
04 NARRATIVE DESCRIPTION

In the past, some neighborhood residents dug for worms on PCB-contaminated landfill.

01 [X] F. CONTAMINATION OF SOIL
02 [X] OBSERVED (DATE 1986, 1989) [ ] POTENTIAL [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: 40 (Acres)
04 NARRATIVE DESCRIPTION

Documented release of PCBs to soils of landfills.
Documented releases of petroleum and ammonium hydroxide from underground storage tanks.

01 [X] G. DRINKING WATER CONTAMINATION
02 [ ] OBSERVED (DATE) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 90,000
04 NARRATIVE DESCRIPTION

Groundwater at facility is contaminated with PCBs (up to 1.7 ug(l)). There is a potential for municipal wells to be affected.

01 [X] H. WORKER EXPOSURE/INJURY
02 [ ] OBSERVED (DATE) [X] POTENTIAL [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 350
04 NARRATIVE DESCRIPTION

Some potential for worker exposure to PCB-contaminated soils at landfills.

01 [X] I. POPULATION EXPOSURE/INJURY
02 [ ] OBSERVED (DATE) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 90,000
04 NARRATIVE DESCRIPTION

Potential drinking water contamination from PCB-contaminated groundwater.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: MI
02 SITE NUMBER: MID042441022

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None observed.

01 ☒ K. DAMAGE TO FAUNA
02 ☒ OBSERVED (DATE: 1987) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include number of species)
PCBs detected in analysis of worm tissue from landfills.

01 ☒ L. CONTAMINATION OF FOOD CHAIN
02 ☒ OBSERVED (DATE: 1987) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
PCBs detected in analysis of worm tissue from landfills.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES
02 ☒ OBSERVED (DATE: 1986) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 90,000
04 NARRATIVE DESCRIPTION
PCBs-contaminated soils eroded into river. Groundwater contaminated by PCBs.

01 ☒ N. DAMAGE TO OFFSITE PROPERTY
02 ☒ OBSERVED (DATE: 1986) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Kalamazoo River sediments contaminated by PCBs.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Process wastewater discharged to city sewer following pretreatment. Pretreatment does not remove oils.

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
None observed.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
None.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 90,000

IV. COMMENTS
Facility is a PRP for NPL site.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
EPA and MDNR files.
VSI conducted 11/13/91.

ATTACHMENT B

VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS

VISUAL SITE INSPECTION SUMMARY
GEORGIA-PACIFIC CORPORATION
KALAMAZOO, MICHIGAN
MID 042 441 022

DATE	:	November 13, 1991
FACILITY REPRESENTATIVES	:	Philipp Hester Environmental Engineer Al Campbell Maintenance and Environmental Engineer Al Beshire, Corporate Engineer
INSPECTION TEAM	:	Russ Crittenden, Dynamac Corporation Valerie Farrell, Dynamac Corporation
PHOTO DOCUMENTATION	:	Valerie Farrell
WEATHER CONDITIONS	:	Sunny, 40-45° F, windy
SUMMARY OF ACTIVITIES	:	The VSI began at 7:30 A.M. at the Georgia-Pacific Corporation facility, located at 2425 King Highway in Kalamazoo, Michigan. Ms. Farrell reviewed the purpose of the facility visit with the facility representatives. Mr. Crittenden asked a variety of questions to fill gaps in available file information. Mr. Campbell and Mr. Hester gave an overview of the facility operations and provided the inspection team with company brochures that contained facility process diagrams and maps. The facility representatives described the facility as a 100-acre property employing 300 persons and producing approximately 370 tons of paper per day from wastepaper and virgin pulp. They continued to describe the facility as located in a mixed residential and industrial area, with a mill area on the north bank of the Kalamazoo River, and three separate landfill areas on the south bank of the river.

Downtown Kalamazoo is located two miles west of the facility. The metropolitan population of Kalamazoo is approximately 90,000 people.

The facility representatives summarized the waste generating processes associated with each step of its de-inking and papermaking process. In addition, they described the various wastestreams generated in facility maintenance, heating, wastewater treatment, and laboratory activities. They continued to describe the solid waste management units that managed each waste stream.

The facility representatives also discussed several underground storage tank removals, as well as the facility's regulatory history and status, including air and NPDES permits, as well as the facility's status as a generator of RCRA wastes.

At approximately 9:30 A.M., the inspection participants began the tour of the facility. The tour included all process areas and solid waste management units at the facility.

During the tour, Dynamac personnel observed 13 solid waste management units, including two used for the accumulation and storage of hazardous wastes. One of these areas is a hazardous waste drum storage area, for storing drums containing a variety of hazardous wastes for less than 90 days. During the early 1980s, this area was designated as the facility's permitted hazardous waste storage unit. No hazardous wastes were present in this area at the time of the VSI.

The other area used to manage hazardous wastes is a paint waste satellite accumulation area for solvent-based paint wastes generated from cleaning painting equipment used during facility maintenance.

Dynamac photographed solid waste management units and areas of concern observed during the facility tour. At approximately 1:50 P.M., Dynamac completed the tour and began a brief exit interview with the facility representatives before leaving the facility at 3:00 P.M.

Photo No.: 1 **Location:** SWMU No. 1
Orientation: Southwest **Date:** November 13, 1991
Description: Door of hazardous waste drum storage area (SWMU No. 1).

Photo No.: 2 **Location:** SWMU No. 1
Orientation: Southwest **Date:** November 13, 1991
Description: Unlabeled drums of nonhazardous light ballasts and grease in hazardous waste drum storage area.

Photo No.: 3 **Location: SWMU No. 1**
Orientation: Northwest **Date: November 13, 1991**
Description: Hazardous waste drum storage area.

Photo No.: 4 **Location: SWMU No. 2**
Orientation: Southeast **Date: November 13, 1991**
Description: Nonhazardous waste drum storage area. Three drums contain dilute ammonium hydroxide, one drum contains "oil-dry" (unused) and one drum is empty.

Photo No. : 5
Location : SWMU No. 3
Orientation : Northwest
Date : November 13, 1991
Description : Paint thinner waste satellite accumulation drum located on ground floor level of Mill No. 1.

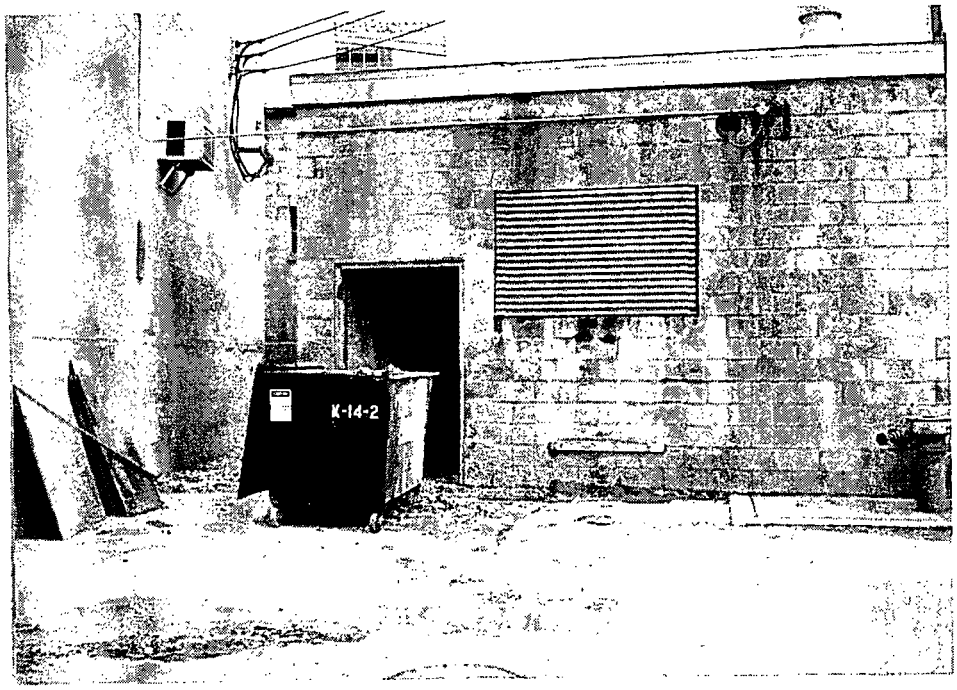


Photo No.: 6 **Location:** SWMU No. 4
Orientation: Northeast **Date:** November 13, 1991
Description: *Screened materials dumpster located at wastewater interceptor.*

Photo No.: 7 **Location:** SWMU No. 4
Orientation: South **Date:** November 13, 1991
Description: Wastewater treatment plant 135-foot clarifier.

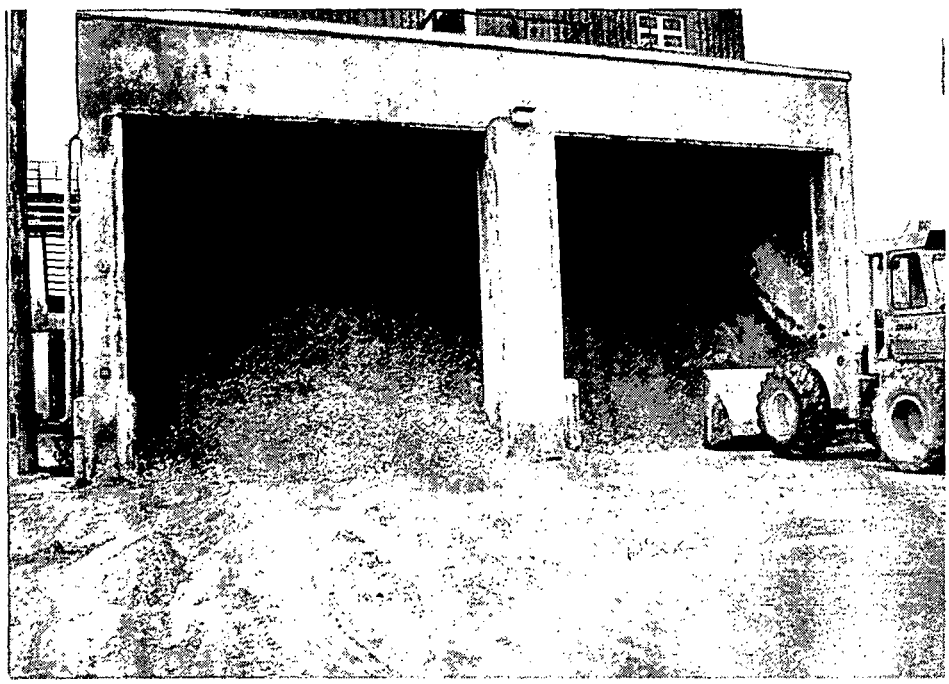


Photo No.: 8 **Location:** SWMU No. 4
Orientation: Southwest **Date:** November 13, 1991
Description: Dewatered residuals piled in wastewater treatment plant building awaiting transport to King Highway Landfill (SWMU No. 5).

Photo No.: 9
Orientation: North
Description: Active cell No. 2 at the King Highway Landfill.

Location: SWMU No. 5
Date: November 13, 1991

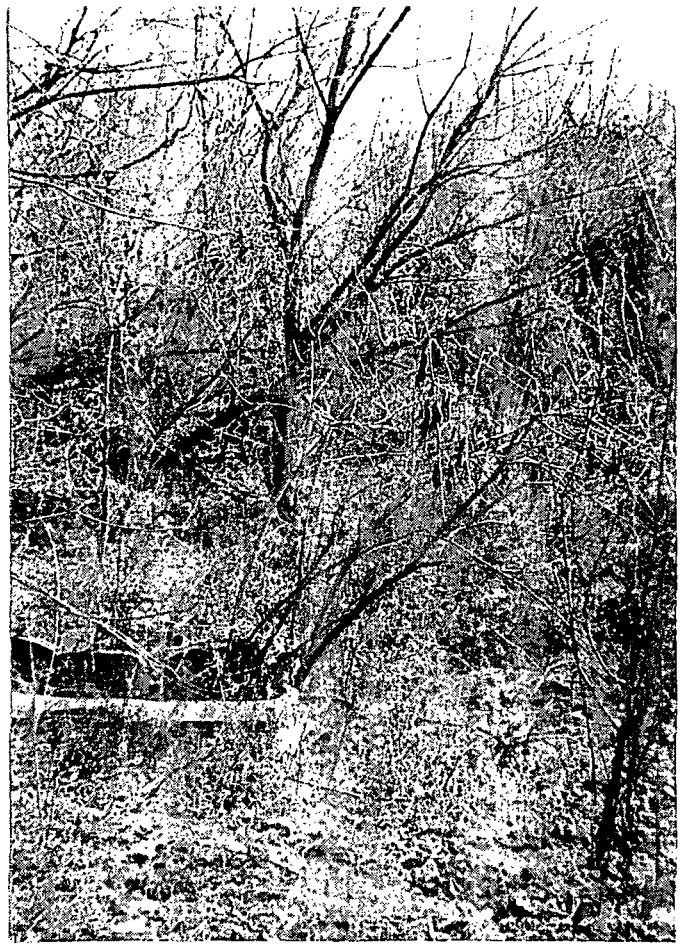


Photo No. : 10
Location : SWMU No. 6
Orientation : Southwest
Date : November 13, 1991
Description: Carframe and vegetation on Willow Boulevard Landfill.

Photo No.: 11
Orientation: North
Description: Vegetated surface of "A" landfill.

Location: SWMU No. 7
Date: November 13, 1991

Photo No.: 12
Orientation: South
Description: Bare patch on "A" landfill.

Location: SWMU No. 7
Date: November 13, 1991

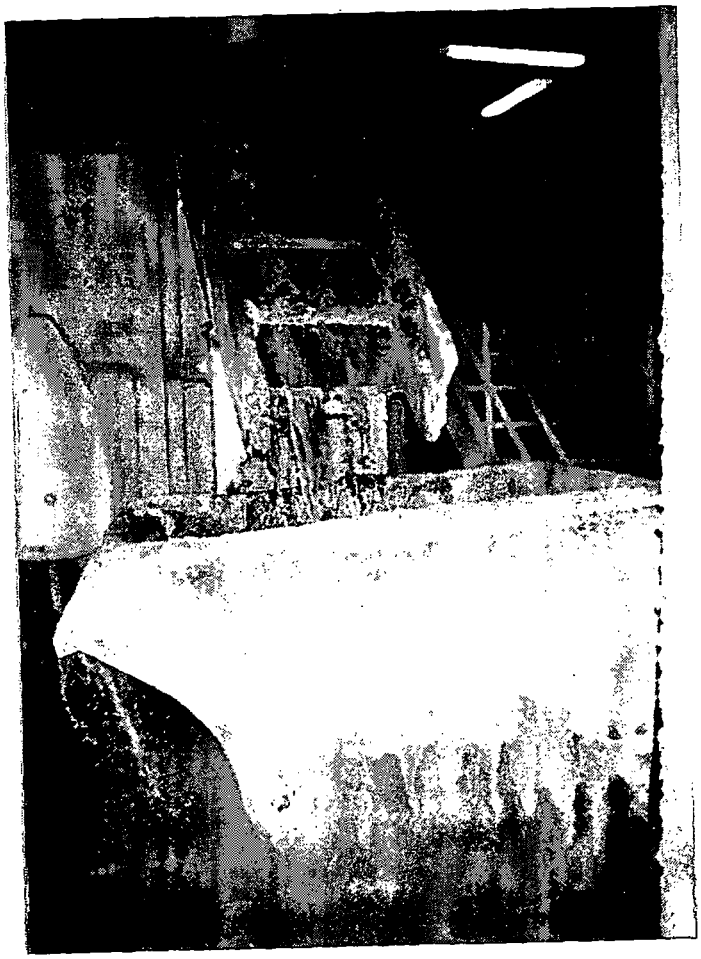


Photo No. : 13
Location : SWMU No. 8
Orientation : East
Date : November 13, 1991
Description : Hopper for rejected material screened from wastepaper pulp.

Photo No.: 14
Orientation: Northwest
Description: Collection bin for pulp bale binding wire.

Location: SWMU No. 9
Date: November 13, 1991

Photo No.: 15 **Location:** SWMU No. 9
Orientation: Northwest **Date:** November 13, 1991
Description: Scrap metal roll-off located outdoors near old Mill No. 5.

Photo No.: 16 **Location:** SWMU No. 10
Orientation: North **Date:** November 13, 1991
Description: Portable 250-gallon waste oil tank located in maintenance area of Mill No. 4.

Photo No.: 17 **Location:** SWMU No. 11
Orientation: East **Date:** November 13, 1991
Description: 1,000-gallon waste oil AST in diked area surrounding unused 500,000-gallon fuel oil AST.

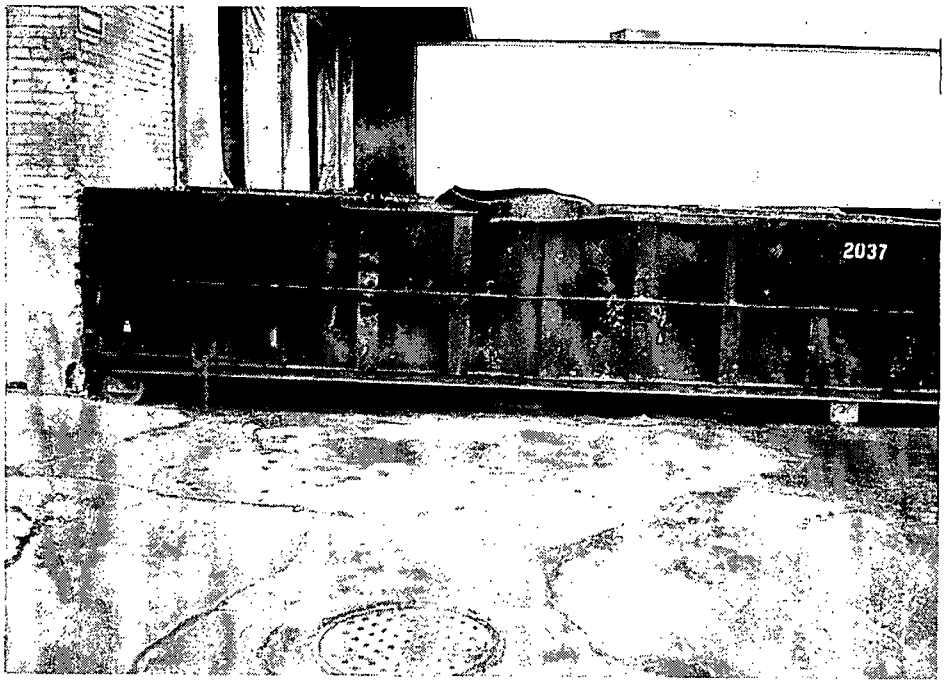


Photo No.: 18 **Location:** SWMU No. 12
Orientation: Northeast **Date:** November 13, 1991
Description: Roll-off for crushed barrels and other municipal waste.

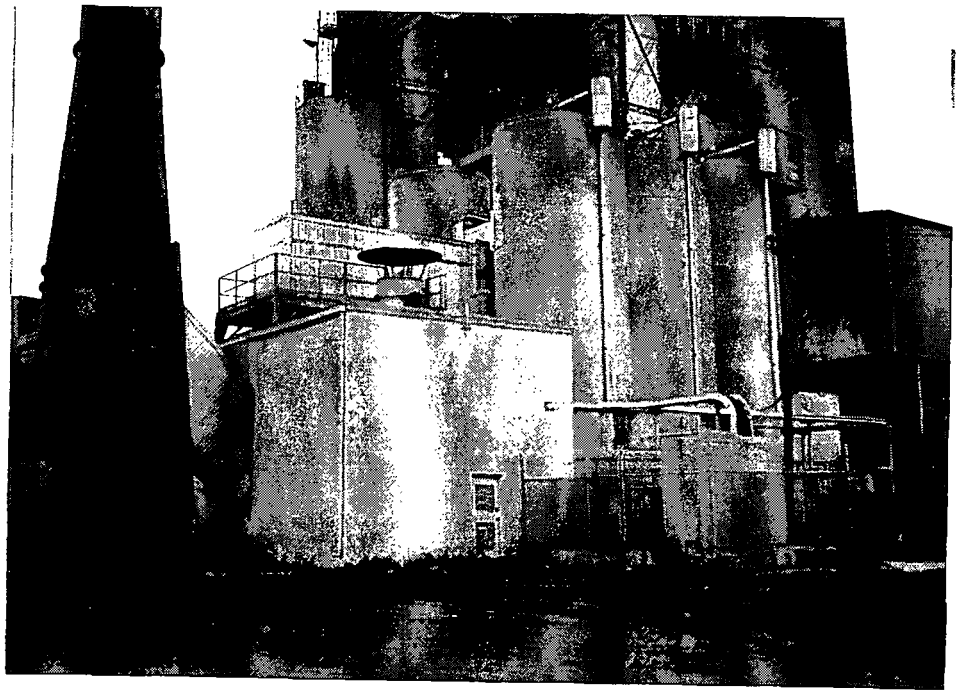


Photo No.: 19 **Location:** SWMU No. 13
Orientation: Southeast **Date:** November 13, 1991
Description: Blue baghouses for fly ash collection and gray storage silo for combined bottom and fly ash storage.

Photo No.: 20 **Location:** AOC No. 1
Orientation: Southeast **Date:** November 13, 1991
Description: Area of removal of three USTs: one leaking 30,000-gallon tank for No. 6 fuel oil; one leaking 12,000-gallon tank for diesel fuel; and one 5,000-gallon tank for kerosene (not leaking).

Photo No.: 21
Orientation: West
Description: Area of removal of one leaking 10,000-gallon gasoline UST.

Location: AOC No. 2
Date: November 13, 1991

Photo No. : 22
Location : AOC No. 3
Orientation : North
Date : November 13, 1991
Description: Area of removal of one leaking 12,500-gallon ammonium hydroxide UST.

END OF PHOTOGRAPHS

ATTACHMENT C

VISUAL SITE INSPECTION FIELD NOTES

Georgia - Pacific Corp.
November 13, 1991

Arrived at 7:30 am. Met:
Phil Hester — Env. Engineer
Al Campbell — Maint. & Env. Eng.
Al Beshire — Corp. Engineer.
Inspectors: Russ Crittenden, Valerie Farrell.

Introduction made by Valerie. Got facility maps.
Russ asked some scattered questions on various topics

Process.

1st - De-inking of waste paper. trucked in from printers / suppliers ... Add water, NaOH, dispersing (animal fat?) / 40% waste (40-50%) paper. Remainder virgin pulp.) Hydro pulper.

2nd Screen - takes out plastic, wood, etc. to dumpster under floor. Type II waste.

3rd Deflaker - rotating device separates fibers

4th Sand trap - small heavy impurities (sand staples, etc.) to dumpster (otherwise)

5th - Flotation Cells - air injected to float ink which is skimmed. Some to pulper - most to sewer. pretreatment on facility then to river.

11/13/91

WWTP - thickened, dewatered, to King Hwy
Type III

6th - Pressure screens remove fiber bundles not yet seperated. Fibers to sewer. (some plastic ink)

7th Cleaners - remove more

8th Screen - more removal

9th Thickener - water removal, water to pulper.

10th Add peroxide, NaH_2SO_4 (?) / to Bleach Tower. just before going
Sodium Hydrosulfite

11th Blended w/ pulp from Pulper. Bought.
sometimes add clays. Sometimes dye at this step.

12th Refiner - removal of impurities, to sewer.

13th cleaners / screens ↗

14th Paper machine
head box spreads pulp on to fourdrinier (traveling screen). drains some water. Press section squeezes out water. Dryers next (evaporation). Size press starches paper (sealing, treating). Re dry. Calender puts a smooth surface on paper. Wound up. Trimmed. Sold.

1 Cutter 1/13/94

Lubricating → 200/500 gallon tanks in each shop to collect waste lubricants (4). when full, pumped to waste oil UST. stored mid 70. hauled 1 to 2 times a year. Have analysis - non haz.

All production water from K. River. WWTP has water well. 300 people employed. ~100 acres. Fences → manufacturing part / not along river. → landfills restricted access. 24 hr. security. 3 shifts. ~370 tons / day production.

Spills / releases other than LUST none. Prior overflow to river discontinued. Now to city WWTP. Happened once. No floods reached facility.

NPDES - non-contact cooling discharge, applied for renewal - 1985

Air permits - one #5 boiler coal-fired for power / steam for dryers. 40% of electrical needs
No permit for Safety Kleen / 3 of them. But reported emissions

D Cutter 1/13/94

PCB Transformers. 7 left.
retrofilling.

Release from vandalized Transformer in late 70's. Transformer in old unused building. Soil removal. will get more info.

Kalamazoo River is a Superfund NPL site.
G-P is one of the PRP's

Started Facility tour at 930.

1) Bldg 311. Receiving of waste paper.

Photo 1 dumpster - scrap bands west 950

Hydropulper - tanks / pumps for added chemicals (demister, caustic)

2) 303 sewers in floor

Photo 2 screened metal dumpster north 1000

Photo 3 Flotation cells northeast 1006

Slime mold / bacteria killed w/ methylene bis (thiocyanate)

Photo 4 binding wire waste bin (recycled) west 1011

Photo 5 scrap boxes/paper dumpster in shipping area west 1015

4) Machine shop
Photo 6 Safety Kleen parts washer north 1019

5) Compactor - municipal solid waste
Photo 7 north 1025

Photo 8 30 yd roll off 1035
crushed barrels

6) Maintenance mill 4 Photo 9 waste oil portable tank 1035
Bldg 404 north

7) Haz Waste Storage 14' x 50' 2" ramp
Photo 10 door south 1042

- Unused oil dry sausages
- Flouresent light ballasts - non haz not labeled
- grease

Photo 11 room west 1044
Photo 12 ballasts from south 1046
Photo 13 non haz drums east 1049
(NH_3OH & water)

11/13/91

11/13/91

8) Basement under machine #8

water / pulp yellow stain (dye)
empty drums; oil, acid, dye

9) Machine #8

10) Paint area

Photo 14 1105 west Bldg 8/10 2
Sat. Accum. drum, paint waste
1 drum closed.

11) Intercept station for all
waste water. screened big scrap
in dumpster.
Photo 15 north 1112

12) Clarifier / Sludge Press

Photo 16 southwest dried sludge 1120
17 southeast clarifier 1122

- 4.5 - 5 mil gal day WW
- 150 cu. yds day sludge.

Rwa 11/13/91

13) Scrap metal bin
Photo 18 west 1125

14) Used oil tank
Photo 19 east 1130
Inside diked area - cracked concrete.

15) Coal ash

Blue silos - fly ash bag houses
Gray silo - bottom / fly ash storage

Photo 20 east 1131

ash trucked out to type III LF

16) Gas Tank LUST
Photo 21 west 1135

17) #6 residual ~~Diesel~~, fuel oil, kerosene LUST area
Photo 22 east 1140

18) Ammonia tank area
Photo 23 north 1145

Rwa 11/13/91

1200 Broke for Lunch and buy new film.

19) Photo 1 (new roll) 1310 northwest. King's Hwy LF photo from south entrance cell 2. Cells 1 & 2 filled. Cells 3 & 4 old lagoons. ~~across~~ fence open.

20) Allied LF
Photo 2 North 1326
old field-type veg. fence partial. locked gate

Photo 3 SE 1330
bare patch - site of boring

21) Willow Blvd. LF
fenced, locked gate, not yet closed.

Photo 4 riprap on river SE 1340.
5 Trees on LF SE 1342

Finished tour at 1350.

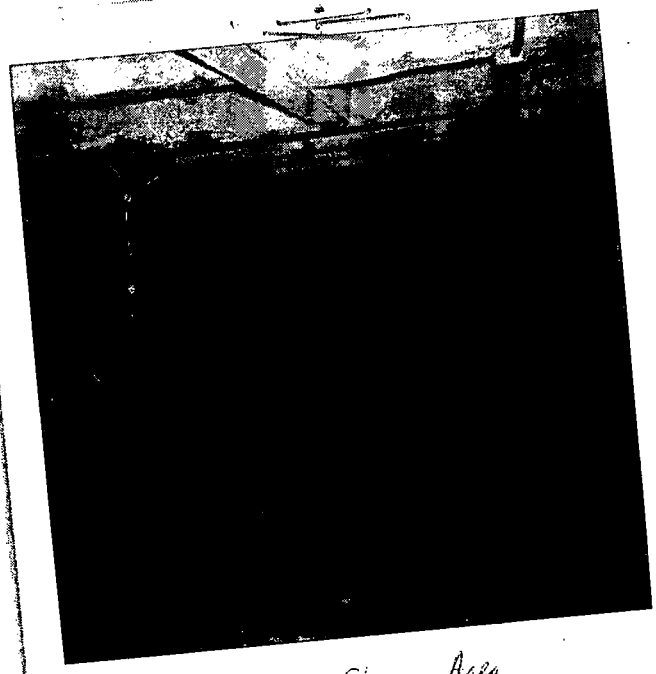
Rwc 11/13/91

Laboratories — paper test stations — in bldg 113 since ~1984 prior - unknown date
- central lab

trial chemicals, new coatings, etc.
cleaned out old reagents, etc. this year manifested.

Finished wrap-up and left facility at 1500.

Rwc 11/13/91



Hazardous Waste Storage Area
Georgia Pacific MID 012 441 022

Hazardous Waste Storage Area
Georgia Pacific MID 012 441 022

SUPERFUND

SQG

TABLE 3
SWMU AND AOC SUMMARY

Solid Waste Management Unit	Operational Dates	Evidence of Release	Suggested Further Action
1. Hazardous Waste Drum Storage Area	Unknown to Present*	None Documented.	None.
2. Nonhazardous Waste Drum Storage Area	1985 to Present	None Documented.	None.
3. Paint Thinner Waste Satellite Accumulation Drum	Unknown to Present	None Documented.	None.
4. Wastewater Treatment Plant and Dewatering Presses	1954 to Present	Dewatered residuals spilled on ground.	Contain spills of WWTP residuals.
5. King Highway Landfill	1954 to Present	PCBs in soil and river sediments.	Continue PCB monitoring, develop remediation plan.
6. Willow Boulevard Landfill	1960s to 1975	PCBs in soils, river, and groundwater.	Continue monitoring and developing remediation plan.
7. 'A' Landfill	Unknown to 1987	PCBs in soils, river, and groundwater.	Continue PCB monitoring, vegetate surface, and develop remediation plan.
8. Rejected Material Collection System	1975 to Present	None Documented.	None.
9. Scrap Metal Collection System	Unknown to Present	None Documented.	None.
10. Portable Waste Oil Tanks	1983 to Present	None Documented.	None.
11. 1,000-Gallon Waste Oil AST	1983 to Present	Oil stain on cracked concrete pad.	Sample soils and clean up oil stain.
12. Empty Drum Crushing and Disposal Area	1982 to Present	None Documented.	None.
13. Coal Ash Baghouses and Storage Silo	1982 to Present	None Documented.	None.

INITIALS

* SWMU No. 1 underwent MDNR-approved RCRA-closure in 1985 and is currently used to store hazardous waste for less than 90 days.

TABLE 3 - continued
SWMU AND AOC SUMMARY

Area of Concern	Operational Dates	Evidence of Release	Suggested Further Acti
1. Fuel Oil and No. 6 Residual Fuel Oil UST Area	Unknown to 1989 and 1991	Contaminated soils.	Continue groundwater monitoring.
2. Gasoline UST Area	Unknown to 1989	Contaminated soils.	Continue groundwater monitoring.
3. Ammonium Hydroxide UST Area	Unknown to 1990	Contaminated soils.	Initiate soil borings and groundwater monitoring.